1992

Nuclear power : the development of a political technology and a propaganda system

Kelly L. Stephens
Lehigh University

AUTHOR:

Stephens, Kelly L.

TITLE:

Nuclear Power: The Development of A Political Technology and A Propoganda System

DATE: May 31, 1992

Nuclear Power: The Development of a Political Technology and a Propaganda System

by

Kelly L. Stephens

A Graduate Thesis

Presented to the Graduate Committee

of Lehigh University

in Candidacy for the Degree of

Masters of Arts

in Government

Lehigh University

May, 1992

This thesis has been reviewed and approved in partial fulfillment of the requirements for the degree of Masters of Arts, Department of Government, Lehigh University.

5/11/92

Professor E. P. Morgan
Thesis Advisor (Date)

5-11-92

Professor F. Colon
Department Chair (Date)

Contents

ABSTRACT 1

INTRODUCTION 3
"The Nuclear Power Life Cycle" 12

CHAPTER 1
"Historical Development *Phase One of the Life Cycle 1945-1962*" 15

"Introduction" 15

"Creation of the AEC and Legislation" 17

"The Corporate Connection" 29

"Conclusion & Discussion" 34

CHAPTER 2
"*Phase Two of the Life Cycle 1964 - 1977*" 38

"Introduction" 38

"The Great Promotion" 39

"Commercialization and the Oil Crisis" 43

"Public Involvement and Related Issues" 50

"Economic Aspects" 58

"Trend Toward Decline" 61

CHAPTER 3
"*Phase Three of the Life-Cycle 1978 & TMI*" 63

"Before the Accident" 63

"Plant Design" 65

"The Media and Nuclear Propaganda" 69

"What Happened?" 75

"The Media and the Accident" 78

CHAPTER 4
"*A New Direction for Nuclear Power Policy?*" 95

"Introduction" 95

"TMI-Related Developments" 96

"Chernobyl and the U.S. Nuclear System" 98

"A Breach of the System" 102

"New Rhetoric" 105

CHAPTER 5
"Conclusions" 113

BIBLIOGRAPHY 116

VITA 124

Abstract

This thesis explores the mainstream media's role in the development of the United States nuclear power program and its deference to the pro-nuclear agenda of government and industrial elites. It also provides a concrete example of how the media operated in disseminating pro-nuclear information to the general public, through its coverage of the accident at Three Mile Island and current nuclear issues.

The debate concerned with public policy issues and the utilization of nuclear power for electrical generation arose from the Federal Government's economic as well as political involvement in the promotion and regulation of nuclear technology development. Although the political issues surrounding nuclear power itself have evolved since the first prototype went into operation, issues obscured through the media such as plant safety and regulation continue to be salient.

The evolution of nuclear power essentially falls into three phases which are defined by the growth of a propaganda system in which media, political, and industrial actors cooperate in framing public information to support a pro-nuclear consensus. The exploration of this thesis will be as follows: a discussion of a three phase life-cycle of nuclear power; the first phase being delineated by legislation and economic forces; the second, describing nuclear power commercialization and developing externalities; and the third exploring the media's role in the endorsement of the government's pro-nuclear agenda through a case study of the accident at TMI and more recent nuclear developments. The conclusions of this thesis find the resilience of the

nuclear propaganda system to be virtually unaffected by set-backs of the last two decades, as government and industrial nuclear supporters attempt to rejuvenate popular support. Whether the third phase of the nuclear life-cycle will result in nuclear power's demise or its rebirth will depend upon two things: 1) public recognition of the media, government, and industry complex, and 2) their ability to effectively breach the propaganda system.

Introduction

Development and implementation of nuclear energy technology has been economically supported by the Federal Government and promoted by the media since commercial nuclear efforts began after World War II. Nuclear power, throughout its history was extolled by government officials and reported in the mainstream media as an energy source that promised to be a lucrative investment for large corporations, utilities, and the country as a whole. The employment of nuclear technology for the production of electric energy in the United States has been a topic of heated debate in many arenas, since the start-up of the first nuclear plant in 1957. This debate has flourished over the years among scientists, government leaders, policy makers, economists, academicians, utility owners and environmentalists. While the debate ranges widely, this thesis focuses on media promotion of the government/industry pro-nuclear agenda, especially during the most recent phase of its development.

By viewing the development of nuclear power in three phases; 1945-1962, the development of nuclear power legislation and regulation; 1964-1977, the commercialization of nuclear power end developing externalities; and from 1978 onward, including the media's coverage of the accident at Three Mile Island, one can gain a greater understanding of how the mainstream media function as a promotional arm of the federal government, disseminating pro-nuclear information to the general public in order to garner popular support and forego critical discussion. Throughout the three phases of the nuclear life-cycle, informed and interested groups of individuals, government officials, big business, and big media have worked in aggregate to form a tightly woven

network of powerful elites acting to obscure important information about nuclear power from the general public. It is the endeavors of these interested parties, prior to the accident at TMI, that promoted an atmosphere in which public understanding of the accident and the multifaceted issues surrounding nuclear power was stymied.

The mainstream media's coverage of the accident at TMI and ensuing media discussion provides an excellent case study of how the media defer to official government and scientific sources which support a pro-nuclear political agenda. At first glance, the accident at TMI and the ensuing media coverage appears to have brought the issues of nuclear power to the public forum and under closer governmental scrutiny. But, upon closer inspection of the media's coverage of TMI and more recent developments consistant with its role in the historic development of nuclear power, one can see how the media supported the pro-nuclear agenda set by members of the government/industrial complex. Before an actual analysis of the historic development of the government's nuclear agenda can be conducted and the accident at TMI and its media coverage can be examined in the context of a propaganda system, one must understand the underlying framework which supports such a system.

British scholar J.A.C. Brown (1963) has described, along with numerous other authors, the underlying purpose of propaganda. Whether it is utilized by a government or group for domestic or foreign functions, propaganda seeks to influence people's minds and attitudes in favor of hidden agenda issues by foregoing serious public debate.[1] The propagandist, rather

---

[1] J. A. C. Brown, Techniques of Persuasion: From Propaganda to Brainwashing (Baltimore, MD: Penguine Books, 1963). p. 12.

than initiate inquiry or controversy, only allows for dialogue in which preconstructed answers are known in advance or arguments which support the agenda are widely realized and accepted.

For propaganda to work, it must coexist in an atmosphere of technological advancement;

> Only in the technological society can there be anything of the type and order of magnitude of modern propaganda, which is with us forever; and only with all-pervading effects that flow from the propaganda can the technological society hold itself together and further exist.[2]

A technological society bases that society's advancement upon scientific facts and figures relying upon man's need to worship these facts because they supply for him some tangible proof of reality. Such a society integrates man into it by sending him reinforcing messages that attach themselves to man's preexisting beliefs and attitudes. In this society, man becomes excited over every new technological development because this is evidence that he is progressing, and progress is good.

> Man accepts facts as the ultimate reality. He believes that facts in themselves provide evidence and proof, and he willingly subordinates values to them, he obeys what he believes to be necessary, which he somehow connects with the idea of progress. This stereotyped ideological attitude inevitably results in a confusion between judgements of probability and judgements of value. Because fact is the sole criterion, it must be good.[3]

Propaganda relies upon such pervasive beliefs, not concerning itself with what is good for man, but what man believes to be good for himself. Facts presented to man by figures of authority or power, such as government

---

[2] Jacques Ellul, Propaganda, The Formation of Men's Attitudes (New York: Random House, 1965). p. v.

[3] Ellul, 1965. p. xv.

officials, corporate executives, academics, and scientists, dealing with society's progress are not considered to be value laden because through such proof, man's belief in the goodness of progress is reinforced. These aspects of man's belief system allow propaganda campaigns to be successfully initiated. The purpose of propaganda campaigns is to indoctrinate the individuals in our society to serve as unwitting supporters of the policies and practices which are obscured from common view by those with power and authority. The development and promotion of nuclear power in the United States is a glaring example of how a propaganda campaign successfully convinced the United States public that nuclear power was a 'good' technological advancement allowing our society to progress.

The technological base from which the 'peaceful atom' was derived, spawned from the atom's destructive use. This destructive capability was an advancement deployed for use in war. In the wake of public understanding of the destructive nature of the technology, the government had to devise a way in which society would accept the utility of a demonstrably negative progress. By attaching the word 'peace' to the atom's new found potential for electrical generation, society could breathe easier with the knowledge that their government could produce good from bad while continuing to protect and enhance their standard of living. Thus, once a declaration of the atom's peaceful intent was well accepted, by the public, as decidedly 'good', (1945-1962) its progress was undaunted.

Ellul (1965) states that, "propaganda must be based on some truth that can be said in a few words and is able to linger in the collective conscience."[4]

---

[4] Ellul, 1965. p.57.

By coining the phrase 'peaceful atom' the government proposed to the public through suggestion, that peace was to be the new primary focus of atomic technology. This masked the more important governmental role of the atom for weapons production. Later, when electrical generation from the atom was viable (1963-1977), AEC chairman Lewis Strauss suggested through new phrases that atomic power would be 'too cheap to meter' and that unlike fossil fuels it was 'clean and cheap.'

> It is not too much to expect that our children will enjoy in their homes electrical energy *too cheap to meter.*[5] Atomic power will transform the appearance of your home town. If you live in a community darkened by grime and afflicted with smog from power plant or factory smokestacks, you can look forward to seeing your town transformed into a *clean, healthful place.* Atomic furnaces, unlike coal furnaces, use no smokestacks.[6]

These phrases did linger in the collective conscience with their intent and veracity unquestioned. This is evidenced by the lack of public inquiry about nuclear power in the early years of development. In order to forego critical assessment of nuclear power's development in its formative years, all the government had to do was provide enough reinforcing 'facts' to sustain the virtue of this technological progress.

Facts unable to reach mass audiences render those audiences ineffectual in countering the government's efforts to gain public allegiance to a propaganda campaign. Mass media provide the means by which select facts are

---

[5] William A. Gamson et al., "Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach," American Journal of Sociology Vol. 95:1 (July 1989). p. 13.

[6] Harry L. Fisher, former president of the Americal Chemical Society. Quoted in; David L. Sills et al. Accident at Three Mile Island (Boulder, Colorado: Westview Press, 1982). p. 97.

filtered, framed and disseminated to the public, marginalizing dissent and allowing the government to dominate private economic interests.[7] The sources of facts from which the media draw their information is regularly provided by 'experts' whose work is funded and approved by the agents of power. The mass media's role in influencing and forming public opinion is well recognized by those in industry as well as academia. It is the combination of the government's manipulation of scientific and technological information and the media's reliance upon such information which support specific policy agendas and the dissemination of one-sided information packages. To illustrate this point, consider the following package presented on the progress of nuclear power by the Atomic Industrial Forum:

> If the electric chair had been invented before the electric light, would we still be using kerosene lamps? There has always been resistance to technological progress by nervous Nellies who see only the problems and ignore the benefits. Resistance to nuclear energy development is the latest version of this irrational fear of progress and change, the expression of modern pastoralists and nuclear Luddites. Certainly nuclear energy development is not free of problems, but problems can be solved, as the history of technological progress shows. The failure to develop nuclear power will retard our economic growth and make us renege on our obligation to the poor and to future generations. If coercive utopians prevent us from moving ahead now with nuclear energy, the next generation is likely to be sitting around in the dark blaming the utilities for not doing something this generation's officials would not let them do.[8]

Not only does this package neatly provide a pro-nuclear frame of reference, but it also preys upon the 'good of progress' theme mentioned earlier. It presents

---

[7] Edward S. Herman and Noam Chomsky. Manufacturing Consent (New York: Pantheon, 1988). p.2.

[8] Quoted in, Robert Nisbet, "The Rape of Progress," Public Opinion Vol 2. (Feb. 6, 1979). p. 55.

partially framed information by stating that nuclear power's adoption by society will provide a means of solving the ills of poverty. A false claim that does nothing more than make an emotional appeal and connot be proved. The package also refers to the necessity of nuclear adoption for the benefit of our progeny, inferring that if nuclear power is not adopted, future generations will not have sound economic lives. This statement is extremely misleading because what has been left for future generations from the adoption of nuclear power is the huge economic and environmental burden of radioactive waste disposal. Through the presentation of information by these means, the public is disinclined to question their truth or ambiguity. The mainstream media by design, provide no clues as to which facts should be relied upon as reality, nor do they give the public the capability to judge the conflicting information provided by reliable sources.

The Herman and Chomsky propaganda model concisely defines how the mainstream media act in support of the government's hidden agenda to garner public support for its policies, creating the 'necessary illusions' of a democracy. Benjamine Ginsberg as quoted by Chomsky, has stated that this is a democracy which includes

> ...market mechanisms to regulate popular perspectives and sentiments. The "marketplace of ideas built during the nineteenth and twentieth centuries, effectively disseminates the beliefs and ideas of the upper classes while subverting the ideological and cultural independence of the lower classes. Through the construction of this marketplace, western governments forged firm and enduring links between socioeconomic position and ideological power, permitting upper classes to use each to buttress the other...In the United States, in particular, the ability of the upper and upper-middle classes to dominate the marketplace of ideas has generally allowed these strata to shape the entire society's perception of

political reality and the range of realistic political and social possibilities.[9] The Herman and Chomsky propaganda model proposes how information, presented through the mainstream media is framed to through a series of five filters, focusing on the inequalities of wealth and power in our society.

> These filters fall under the following headings: (1) the size concentrated ownership, owner wealth, and profit orientation of the dominant mass-media firms; (2) advertising as the primary income source of the mass media; (3) the reliance of the media on information provided by government, business and "experts" funded and approved by these primary sources and agents of power; (4) "flak as a means of disciplining the media; and (5) "anticommunism" as a national religion and control mechanism. These elements interact with and reinforce one another. The raw material of news must pass through successive filters, leaving only the cleansed residue fit to print.[10]

Author's Lee & Solomon (1991) assert that the manipulation of information, due to these forces, is especially prevalent when the media reports on matters concerned with public health, safety, and the environment.[11] Nuclear power and its related issues fit a propaganda campaign like a hand-in-a-glove. The nuclear power campaign involved government initiation and economic support, technological innovation, business adoption, media support through filtering of information, and public complacency. The ramifications of public blindness to the nuclear campaign are manifested in the accident at TMI, which did not 'expose' the propaganda system, but rather perpetuated its continued acceptance.

When inquiring into the particular aspects of nuclear power which enabled it to mature without much inclusion of public debate, one need only

---

[9] Benjamine Ginsberg as quoted in Noam Chomsky, Necessary Illusions (Boston, MA: South End Press, 1989). p. 7.

[10] Herman and Chomsky, 1988. p. 2. *To gain a greater understanding of how these filters interact, see Chapter 1 of this source.*

[11] Martin Lee and Norman Soloman. Unreliable Sources (New York: Carol Publishing, 1991). p. 202.

look as far as the government/industrial installation that formulated its development. It is a fact that large corporations, the likes of GE and Westinghouse have been and continue to be the largest corporations involved with nuclear power and atomic weapons production. Ralph Nader, anti-nuclear advocate once stated, that if these corporations owned the sun, the Unites States would have solar power instead of nuclear power. It should not be surprising, then, to learn that these two corporations are extremely diversified and although they don't own the sun they do extend their economic reach into the mainstream media.

> GE is the owner of RCA, which owns the NBC network, and Westinghouse owns major television-broadcasting stations, a cable network, and a radio station network. Both corporations are huge, diversified, multinational companies heavily involved in the controversial areas of weapons production and nuclear power.[12]

Since executive personnel in these corporations have been bank trustees and government officials, it is also true that their interests will be carried with them to these and other corporate boardrooms. "The mass media are drawn into a symbiotic relationship with powerful sources of information by economic necessity and reciprocity of interests."[13] Although this is a more recent analysis of the interests which are large contributors to the propaganda system, it can be deduced that little has changed since nuclear power got its start.

The Nuclear Power Life Cycle

The development of the nuclear political agenda evidenced in the first phase of its life-cycle through documentation of government financial

---

[12] Herman and Chomsky, 1988. p. 12.
[13] Ibid., p. 18.

support and industrial cooperation carried over from the war efforts to develop the atomic bomb. During these years, 1945 - 1962, legislation was instituted to secure the steady transition of nuclear technology from the military to the civilian domain. Once legislation was in place for regulation procedures, and the first proto-type plants were on-line, commercial employment of nuclear power began to climb throughout 1963 and the early 1970's. During this time, large businesses and utilities had been convinced through Government efforts and the media, to invest extensive amounts of capital into this form of electrical generation. Although numerous orders for nuclear generating plants (Light Water Reactors such as, Pressurized Water Reactors, PRW and Boiling Water Reactors, BWR) had been made during the late 70's, the cost of setting up an operational plant became almost prohibitive. Cost escalation was due to utilities' recognition that the true economic costs of building a plant had been distorted by the unrealistic price setting of the 'turnkey' plants along with active public opposition to nuclear power. The 'turnkey' plants gave an unrealistic economic profile of the potential financial gains that utilities could expect. The corporations who sold the first plants to utilities, took a financial loss by establishing a set price for the plants which was lower than their actual cost. This price grew, as the preset bidding ceased. As of 1978, new orders for reactors came to a halt and none have been ordered since that time.

Immediately following the decline in orders and investment in power plants, the accident at Three Mile Island, in Middletown, PA near Harrisburg occurred on March 28, 1979. This accident was reported to be the worst nuclear accident on record in the world at that time, and was covered extensively by the mainstream media for more than two years. It is ironic that

the state which witnessed the first operation of an electrical nuclear power plant prototype in 1957, was also the state that experienced the industry's worst accident. After this accident, the nuclear industry was 'scrutinized' by the American public. Greater attention was paid to the government procedures and regulations involved with nuclear power, utility control of plant operations, and health, safety and technical issues central to plant operations in the United States. After the accident at TMI, another, more devastating accident at the Chernobyl nuclear plant in the Soviet Union occurred in 1986. The affects of this accident coupled with the declining public support of nuclear power in the U.S. resulting from TMI, appeared to have solidified the decline of nuclear power in the United States. Another factor which contributed to the declining phase of the nuclear power life cycle has been the issue of nuclear waste. The public has begun to recognize that the waste produced from the operation of these plants is highly radioactive and that it needs to be disposed of in a safe manner. Currently, there is no safe method for disposing of this waste.

The descent of the United States nuclear program was due to the latent affects of TMI such as, the marginal financial returns received by plant owners and nuclear investors, and public concern over the questions raised about the safety of nuclear power here in our own country. Since the time of these two accidents, a number of plants that had been ordered and planned for start-up in the late 1980's did not meet this goal. The Shoreham Plant in New York was abandoned, and the Seabrook plant in New Hampshire was delayed due to public outcry and mobilization, and increased plant safety requirements.

In the 1990's the government/industry/media conglomerate are attempting to kick-off a new nuclear campaign. Conditions for the success of

new pro-nuclear campaign are beginning to blossom, due to developments such as the war in the Persian Gulf which has again attracted the nation's attention to U.S. dependency on foreign energy supplies. Public concern over U.S. energy dependency upon fossil fuels has coalesced with a concern over the depletion of the ozone layer and the greenhouse effect due to electrical generation from such plants. As a consequence of these concerns, the environmental movement has had a resurgence. Government and industry representatives as well as the media are slowly promoting nuclear energy once again, as an environmental energy source, proclaiming that it is a 'cleaner and greener' form of electrical generation.

The paper that follows tests the hypothesis that a system of nuclear propaganda was created by government involvement in and economic backing of nuclear power and that the media played an indispensable role in the development and promotion of the technology. It is this aspect of the media and its historic coverage of nuclear issues which became more evident in the accident at TMI, solidifying a third phase of the nuclear power life-cycle in the U.S.

Chapter 1

Historic Development of Nuclear Power:

Phase One of the Life-Cycle 1945 - 1962

Introduction

In order to understand the evolution of government involvement in the development of nuclear power in the United States and the nuclear propaganda system, one must look at the origins of the country's atomic programs. The historic and legislative development of nuclear power reviewed here is by no means complete because certain aspects of nuclear power such as uranium mining and milling and international issues are not addresses. The issues which later develop coincide with the evolving complexity of this political technology and public concern over previously neglected nuclear issues. This chapter reviews the planting of the nuclear power seeds and their protective nurturing by the federal government.

The effort to develop nuclear fission as a cheap and reliable source of energy has been one of this century's most important planned efforts by the Federal Government to alter society by confounding the democratic process and neglecting to include public decisions in the development and regulation of a dangerous technology. The nuclear propaganda campaign has been controlled by elite groups of government funded scientists and engineers with an intellectual stake in its success, an assortment of government officials and organizations, major corporations with a financial stake in its proliferation, along with the cooperation of the mainstream media.[14]

---

[14] Irvin C. Bupp and Jean-Claude Derian, The Failed Promise of Nuclear Power, (New York: Basic Books, 1978), p. 179.

Atomic power was born with the arms race and the utilization of this power originated through the United States military's development and deployment of the atomic bomb. It has been stated by numerous authors that atomic technology has been one of the greatest achievements of human scientific effort throughout history and one with the greatest potential for self-destruction.

The U.S. nuclear weapons development program was carried out in virtual secrecy. This program was established under the auspices of the Army in the early 40's and was called the Manhattan Engineering District (MED), better known as the Manhattan Project. At this time the existence of the MED was not known by the general public for military reasons. Its sole purpose was directed toward the rapid research and development of the atomic bomb. The Army was given complete control over the project which included: construction of facilities, operations, information, developments, and security. The government had absolute control of the atom from the very beginning.[15] Because of the government control of atomic development from its origins, the later 'peaceful' application of this technology was also controlled and subsidized by the government.

Through the diligent efforts of the U.S. Army's MED the atomic bomb was devised. Under the leadership of President Harry Truman, the first atomic bomb was dropped on Hiroshima, August 6, 1945 and three days following, a second bomb was dropped on Nagasaki. The war was won and two devastated Japanese cities felt the effect of U.S. harnessed technology.

After the war, the government had amassed a stockpile of weapons

---

[15] Frank G. Dawson, Nuclear Power, Development and Management of a Technology. (Seattle: University of Washington Press, 1976). p. 14.

facilities, and uranium enrichment plants. Through the concerted efforts of personnel in the government and military sectors, an organized structure was created for conducting atomic research. Commercial contracts were made by the government with large civilian corporations for the building of atomic facilities. There was also a consortium of scientists, engineers and other trained personnel who had been involved with research and development related to wartime efforts.[16] The impetus to continue atomic R&D resulted from this organization. In an effort to secure the refinement of atomic weapons, the government devised a program which would cloak weapons research from public view, gain public acceptance for more honorable atomic endeavors and also stimulate a wide range of industries. These interests prompted the U.S. government and supportive scientists to construct a program for the 'peaceful application' of the atom. By promoting the benefits of peaceful atomic applications to the public, the government was able to assure U.S. military superiority while providing the public with a more acceptable use nuclear technology.

Construction of the AEC and Legislation

In order to facilitate commercial applications for nuclear power, President Truman established the Atomic Energy Commission(AEC) in October 1945; along with it a Special Senate Subcommittee on Atomic Energy was also set-up . The AEC was under the chairmanship of David Lilienthal who had formerly been the Chairman of The Tennessee Valley Authority. The Commission's purpose was to run all atomic programs, from bomb production to medical use and research. Two bills concerned with atomic control were set

[16] Dawson, 1976. p. 15.

before Congress for consideration and debate. One of these bills initiated by a senator on the Subcommittee was the McMahon Bill. This bill was backed by atomic scientists and dealt with the civilian control of nuclear technology. The other bill was the May-Johnson Bill which dealt primarily with military control of the technology.[17] In June of 1946, the McMahon Bill was passed by the Senate and the following month Truman signed the Atomic Energy Act of 1946 which included the provisions from the McMahon Bill.

The mission of the AEC was described this way in the 1946 Act itself:

> it is hereby declared to be the policy of the people of the United States that the development and utilization of atomic energy shall be directed toward *improving the public welfare, increasing the standard of living,* strengthening free competition among private enterprises so far as practicable, and cementing world peace.
> (b) Purpose of the Act - it is the purpose of this Act to effectuate these policies by providing, among others, for the following major programs:
> (1) A program for assisting and fostering private research and development on a *truly independent basis* to encourage maximum scientific progress;
> (2) A program for the free dissemination of basic scientific information and for the maximum technical information;
> (3) A program of federally conducted research to assure the Government adequate scientific and technical accomplishments;
> (4) A program for the Government control of the production, ownership and use of fissionable materials to protect the national security and ensure the broadest exploitation of the field;
> (5) A program for the simultaneous study of the social, political and economic effects of the utilization of atomic energy; and
> (6) A program of administration which will be consistent with international agreements made by the United States, and which will

---

[17] Gordon Dean, Report on the Atom. (New York: Alfred Knopf, 1953). p. 21.

enable Congress to be currently informed so as to take further legislative action as may be appropriate.[18]

A five man Energy Commission was established by the Act. The Commission members would be appointed by the President every five years with the advise and consent of the Senate. Overseeing the AEC was a joint Congressional Committee (JAEC), composed of nine Senators and nine Representatives. The responsibilities of the JAEC as outlined by the Act were to study the AEC's activities and any problems related to nuclear development, use and control. Bills or resolutions dealing with the aforementioned issues which emanated from the Senate or House of Representatives would be referred to the JAEC. The members of the JAEC from each legislative body would then report on the actions of the JAEC to their respective body.[19] A civilian nine member General-Advisory Committee (GAC) was also created to assist and advise the AEC on scientific and technical issues. The term of civilian committee members was six years.[20]

Prodded on by the Cold War and hopes for the peaceful atom, government was able, with the guidance of the AEC and joint committees, to develop commercial reactors, and simultaneously, obtain weapons-grade plutonium as a reactor by-product.[21] The regulatory role of the AEC was

---

[18] United States Atomic Energy Commission, Public Law 585, "The Atomic Energy Act." in United States Statutes at Large, (Washington, D.C.: U.S. Government Printing Office, 60:1, 1947). p. 757. (Emphasis added.)

[19] United States Atomic Energy Commission, Public Law No. 79-585, "The Atomic Energy Act of 1946." in United States Statutes at Large, (Washington, D.C.: U.S. Government Printing Office, 60:1,1947). p. 755.

[20] Dawson, 1976. pp. 21-23.

[21] Sheldon Novick. The Electric War. (SanFransisco: Sierra, 1976). p. 72. (Point made in reference to dual purpose of AEC and to point 4 of 1946 Atomic Energy Act.)

negligible during these early years due to the overlapping interests of continued production of atomic weapons along with efforts to pursue peaceful applications of nuclear technology. This was coupled with the fact that the large private corporations, such as General Electric and Westinghouse, held contracts with the government dating from the war efforts. These corporations and a small number of others, continued to function in their pre-war capacity and as a consequence, were first in consideration by the government for participation in the civilian nuclear program.

In 1951 the AEC established the Experimental Reactor Program. Through this program representatives of public utilities and manufacturers were cleared to study previously classified technology and its commercial viability. Between the time the AEC was established and 1951, research and development of nuclear power was conducted by federally owned laboratories, at military instillations, and at select universities whose programs were funded by the federal government.[22] Through the five year Experimental Reactor Program, the AEC announced that Westinghouse and Duquesne Light Company, the utility operator, both would build a nuclear power plant.[23] The Site selected for the plant was at Shippingport, Pennsylvania; the plant was based upon the pressurized water reactor technology Westinghouse had developed for the Navy's nuclear submarine program. The AEC actually owned the facility and would receive its power output. This plant did not go into operation until 1957.[24]

---

[22] Dean, 1953. pp. 10 - 11.

[23] This plant was actually authorized by the AEC under this program in 1952.

[24] Bupp and Derian, 1978. p.32.

As of 1952, thirteen nuclear reactors had been built for weapons production. The reactors had been built at government owned laboratories and the technology being used for the construction of these facilities was making a steady transition from strict military control into the civilian realm. Experimental energy producing reactors were also being developed at these sites. All of the work at this time was contracted out to private firms. Although the government did no actual hiring it provided the funds necessary for industry to explore the field.[25]

Between 1951 and 1954 the AEC authorized nineteen groups of research scientists from industry to explore the feasibility of nuclear power initiatives in the civilian sector. Around forty utilities, equipment manufacturers, and construction companies were involved.[26] Four of these separate industrial research teams that had been commissioned by the government to study the dual purposes of nuclear technology in 1952. They reported that nuclear reactors could provide economical power to utilities in the very near future. Some of the companies who comprised these teams were; Babcock & Wilcox, Dow Chemical and the Bechtel Corporation.

In 1953, Lewis Strauss became Chairman of the AEC. This was the first term of President Eisenhower and it is important to note that along with holding the position of AEC chair, Strauss simultaneously was advisor to the president. Strauss came from a position in the Navy and served under Admiral Rickover who was the driving force behind the Navy's aggressive nuclear

---

[25] Anna Gyorgy & Friends. No Nukes, Everyone's Guide to Nuclear Power. (York, PA: South End Press, 1979). p. 8.

[26] Joseph G. Morone and Edward J. Woodhouse. The Demise of Nuclear Energy? (New Haven: Yale University Press, 1989). pp. 48 - 49.

submarine program. Thus, Stauss' invested interest in the rapid development of nuclear power came directly from his early involvement. Under Strauss' leadership the AEC was driven more toward the rapid application of nuclear technology for military purposes. The JAEC, however was more interested in the civilian role of nuclear power.[27]

President Eisenhower delivered his 'Atoms for Peace' speech to the United Nations in December of 1953. It was this policy speech which offered foreign nations the opportunity to take part in what was emerging as a U.S. dominated technological area. In this presidential announcement, Eisenhower stated that the peaceful use of atomic energy was a start toward diminishing, "the potential destructive power of the world's atomic stockpiles."[28] The U.S. offered to supply scarce materials for use in nuclear energy producing facilities abroad, as well as technological information and capitol. In essence the U.S. then had technological superiority as well as some control over foreign development.[29] Until this time, no country had made a greater financial and institutional commitment to military and industrial application of nuclear power than the United States.

The government and institutions that were committed to supporting the 'atoms for peace' program hoped that through a peaceful policy emphasis, public attention would be directed away from the negative image of atomic weapons. This conceptual scheme was developed by nuclear's interested

---

[27] Desaix Myers III. The Nuclear power Debate. (New York: Praeger, 1977). p. 38.

[28] Joseph A. Camilleri, The State and Nuclear Power. (Seattle: University of Washington Press, 1984). p. 6.

[29] Camilleri, 1984. p. 295. (The 1946 Atomic Energy Act was amended in 1951 to allow the U.S. to share select technical information with NATO allies.)

parties, (government officials and industrial elites working on atomic research since the war) and aimed at containing the harmful perceptions of nuclear technology, while highlighting the more positive and encouraging applications. The media played a key role in the dissemination of the 'atoms for peace' policy intent, by broadcasting the benefits the American public could look foreword to if they supported this type of atomic development. Government officials and scientific authorities;

> Expressed faith in the inevitability of scientific progress and made emotional appeals to the general public asking them to consider the 'interests of the nation.' This was crucial to the strategy of establishing ideological and cultural legitimation. This carefully orchestrated campaign for greater public acceptance was underpined by the substantial institutional support lavished on the nuclear industry, which was itself the bureaucratization of science.[30]

In February of 1954, a five year Reactor Development program was set-up by the Commission at the urging of the JAEC. There were three rounds of invitations asking industries to participate in nuclear power development. Proposals were received by the AEC and reviewed for contract consideration. A number of different reactor types which had been developed by different industrial corporations were up for consideration. The invitation phases were spread over the course of several years from 1954 to 1958.[31] The program encompassed five reactor construction projects.

Later in that year the President and the AEC proposed changes to the Atomic Energy Act of 1946. These changes provided for the private ownership of reactors under AEC license and private patent rights for the

---

[30] Myers, 1977. p. 42.

[31] Steven Del Sesto, Science, Politics and Controversy: Civilian Nuclear Power in the United States, 1946 - 1974. (Colorado: Westview Press, 1979). p. 50.

production and use of fissionable materials. These activities had previously been under the exclusive rights of the AEC. The new Act also mandated that JAEC authorization be required for construction and property acquisition for nuclear plants. The primary objective of the new Act was to promote the private development of atomic energy. The 1954 Act also included a set of provisions for public participation in the licensing and regulatory proceedings of the AEC;

> In any proceeding under the Act, for granting, suspending, revoking, or amending any license or construction permit...the Commission shall grant a hearing upon request of any person whose interest may be affected by the proceeding, and shall admit any such persons as party to such proceedings.[32]

Although the clause was not utilized frequently by the public during this phase of development, it later proved to be an important factor that contributed to the demise of nuclear power in the United States.

After the passage of the new Act, the government adopted a number of programs to encourage utilities to invest in nuclear power facilities. Among these were the government funding of research, development and demonstration projects. By the following year (1955), three proposals from the first invitation were received by the AEC and all three were approved. Under the program the AEC would waive all charges for the industry's use of fissionable materials, undertake certain basic research in its National Laboratories at government expense and enter into fixed-sum research and development contracts to procure technical and economic data for the applicants.[33] The demonstration program marked the consolidation of the

---

[32] Public Law 703, "The Atomic Energy Act." in United States Statutes at Large 1954. (Washington D.C.: U. S. Government Printing Office, 68:1, 1955). p. 955-56.

[33] Bupp, and Derian, 1978. p. 33.

government-industry partnership in nuclear energy development.[34]

In 1956, the AEC commissioned a report from the Brookhaven National Laboratory in Long Island. This report was commissioned to evaluate the possible effects of a major nuclear reactor accident. The report released March 1957, was entitled ; "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants" it is more commonly referred to as WASH - 740. The WASH - 740 revealed, of the three types of nuclear accidents studied, the worst possible outcome or the "maximum credible accident" could result in 3,400 deaths and 43,000 injuries, property damage as much as $6 billion, contamination of a land area the size of the state of Maryland.[35] Although these numbers appear staggering, they did not cause any hesitation on the part of utilities or the government to continue the hasty development of the program.

Later that same year, a safety report was published by the Engineering Research Institute of the University of Michigan at Ann Arbor. This study focused on the release of radiation from a possible nuclear accident at a plant nearby and the affects of such an accident on the population. The report stated that in a maximum radiation release, 133,000 people would receive high doses of radiation and 181,000 others would receive enough radiation that could prove fatal. This report estimated a greater incidence of injury and death than the government commissioned WASH - 740.[36]

Until the release of these reports, the AEC adjunct committees, industry and utilities did not appear to give much consideration to the health

---

[34] Del Sesto, 1979. p. 55.

[35] United States Atomic Energy Commission, Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants, WASH - 740 (Washington D.C.: Atomic Energy Commission, 1958), pp. 576-579.

[36] Gyorgy & Friends, 1979. p. 10.

and safety hazards inherent in the commercialization of nuclear power. The AEC and its adjunct committees. under the Atomic Energy Act were responsible for the health and safety of the American people. With the adamant government endorsement nuclear power was receiving, one would be led to believe the risks of civilian implementation were minimal. There were a small number of scientists, industry representatives, and a few regulators, however who did not have such an optimistic outlook.

In 1957 the president of GE and representatives of Westinghouse as well as other interested parties, demanded that Congress adopt legislation that would protect the nuclear industry and its participant companies from liability in case that accident would occur. Section 170 of the Act refers to liability of a utility and damages due to an accident. It guaranteed that the law will, "Hold harmless the [nuclear] licensee and other persons idemnified" from the liability claims arising from nuclear accidents causing total damages in excess of $560 million.[37] The Price-Anderson Act was initially passed for a ten year period because government officials felt that within ten years nuclear technology would be perfected to a point where liabilities would not be troublesome to industry or utilities.

Along with the passage of this Act, the 1954 Atomic Energy Act was amended to give the JAEC greater control over the civilian reactor program. It also created an Industry Liaison Branch as part of its Reactor Development Program. The control that was bestowed on the JAEC encouraged it to pressure the AEC for more rapid commercialization of nuclear power. During the same

---

[37] "AEC Staff Study of the Price -Anderson Act, Part 1.", Atomic Energy Law Journal 16:3 (1974). p. 220

year, the first commercial nuclear plant was started-up in Shippingport , PA.

In 1958 the AEC was developing eleven different types of nuclear reactor in conjunction with private industry. Two reactor types of Light Water Reactors were advancing much more rapidly than the others; the Pressurized Water Reactor (PWR) developed by Westinghouse and the Boiling Water Reactor (BWR) based upon GE's developed model. A majority of reactors operating today are based upon these two designs.[38]

The following year, Chairman of the AEC, John McCone announced plans for a new atomic energy program. He proposed a Ten-Year Reactor Development Program in a three-phase sequence. As before, the AEC issued invitations to industry to participate in the program. The most salient characteristic to be noted about the Ten-Year Program, was that it appeared to indicate a nearly institutionalized pattern of relationships between government and industry that had evolved over the years since the inception of such programs. The primary purpose of this program which varies slightly from the others, was to reduce the cost of nuclear power to levels competitive with fossil fuels within ten years.[39]

As of 1961, the number of power plants which were operable or under construction were growing. Of the 10 nuclear power plants that were in operation; two were supported by private industry; five were run by the government; two were run by the government with utility participation; and one had been part of the Reactor Development Program which joined the efforts of government and industry. Of the 17 plants under construction; four were in the

---

[38] Morone and Woodhouse, 1989. p. 62.

[39] Philip Mullenbach. Civilian Nuclear Power (New York: Twentieth Century Fund, 1963). p. 52.

private sector; 4 supported solely by government; one was government supported with utility participation; and eight were the efforts of government and industry under the Development Program.[40] A number of the plants which were under construction at this time had been scheduled for operation prior to 1961. This was due in part to the fact that the initial cost estimations made had increased and delayed the operation of the plants.

In the following year President Kennedy requested that the AEC prepare a comprehensive report on the status of civilian nuclear power. The report was submitted to the President in November of 1962, by AEC Chairman Glenn Seaborg. This report stated that nuclear power was

> on the threshold of economic competitiveness and can (could) soon be made competitive in areas consuming a significant fraction of the nation's electrical energy; relatively modest assistance by the AEC will assure the crossing of that threshold and bring about wide-spread acceptance by the utility industry.[41]

Pursuant of this goal the AEC under the 1957 Development Program's third round of invitations to industry, required industry proposals to include; organizational information, personnel involved with the project, construction schedules and cost figures, systems for reporting construction progress, technical information about the proposed plant, and relative research and development programs. Lack of utility/industry enthusiasm spurned by cost overruns were stalling immediate implementation of the government's rapid construction policy. For these reasons, the AEC continued financially to subsidize research and development endeavors of utilities whose proposals had

---

[40] Dawson, 1976. p. 134.

[41] United States Atomic Energy Commission, Civilian Nuclear Power :A Report to the President --1962 (Washington, D.C.: United States Atomic Energy Commission, 1962). p. 13.

been accepted from the third round of invitations. Thus, the government continued its far from modest assistance and promotion of the nuclear program.[42] The United States nuclear program was rapidly becoming one of the most expensive technological ventures in history.

The Corporate Connection

There was essentially a closed political structure for the development and control of nuclear power in its first phase. With government's financial subsidies eliminating many of the normal constraints imposed upon technological innovation, such as market pressures and legal political obstacles, nuclear technology reached a state of development, which, under normal circumstances, would have required many more decades to achieve.

It is important to note some of the key industrial and utility players in the first phase of the nuclear power life-cycle as well as government expenditures which allowed the U.S. nuclear power program to develop so quickly. The industries and the utilities mentioned here are presented to show how economic forces were used by the government to proliferate nuclear technocracy.[43] The impact of these forces will become more evident in the ensuing chapters.

In 1947, the original efforts to produce energy from the atom were supported through the Manhattan Project. This program was initiated with

---

[42] Del Sesto, 1979. p. 81.

[43] The term technocracy refers to the government control of technology through bureaucratic structures in which those with economic power (large corporations) have a greater influence in determining national policy formation than the general public. (techno{logy demo}cracy).

Monsanto Chemical and General Electric which operated the Oakridge National Laboratory. Breeder reactor technology was being explored at the Knolls Atomic Power Laboratory which at this time was operated by also GE. In 1952, Westinghouse accepted an assignment from the government to work at the Argonne National Laboratory on the Navy's submarine reactors. Through 1951 and 1952, DuPont which had worked at the government's Hanford Laboratory during the war was asked to design nuclear facilities for the Savannah River Site in South Carolina.[44] These companies working through the government owned national laboratories were commissioned to explore military as well as civilian application of the technology. Hence, minimal if any, out-of-pocket costs were incurred by the actual industries.

In 1952, the first major full-scale reactor project in Shippingport was authorized by the AEC. Because of its integral work with the Navy, Westinghouse was assigned the responsibilities of development, design and operation of the plant. Westinghouse received future economic benefits from this first reactor project and became the leader in the government's nuclear plans for the country. The government justified its complete funding of the Shippingport project with the rationale that the expenditures for such a project far exceeded the expenditures private industry was capable of making.[45] One should note the cost of this plant, since it was the first commercial plant which went on-line. The original estimate for cost of the Shippingport plant was $47.8 million which rose to be $70.0 million by the time it was actually operational.

---

[44] Dawson, 1976. pp. 37 - 42.

[45] Bupp & Derian, 1978. p. 32.

As mentioned earlier, in 1952 studies were conducted by industrial teams commissioned by the government to determine the viability of nuclear technology for electrical generation and military uses. These teams were comprised of the following utility/industries; Monsanto Chemical Company and Union Electric Company; Detroit Edison Co. and Dow Chemical Co. with Babcock & Wilcox and Nuclear Development Associates; Commonwealth Edison Co. and Public Service Co. of Northern Illinois; and Bechtel Corp. and Pacific Gas and Electric. The subsequent year, the AEC added five other teams to this group with extended directives for exploration in civilian application.[46]

With the establishment of the Industry Liaison Branch in the 1954 Atomic Energy Act, industry participation began to expand. Notable study groups were added to the ones already commissioned by the government. Of the six new groups which were added, ones of local interest were; Bethlehem Steel Company, which conducted a study on the application of atomic power to the propulsion of commercial ships; and Pennsylvania Power and Light Company which made a detailed study of the economic and engineering feasibility of a large scale nuclear fueled power plant.[47] All of the study teams commissioned by the government focused upon the technical feasibility of commercial implementation of nuclear power plants as the primary focus. None were made to study public opinion, or externalities of the technology.

It has been estimated that from 1941 to 1955, the American government had spent more than $21,300 million in the atomic energy program. By comparison, the contribution of private capital from 1951 through 1954 was

---

[46] Mullenbach, 1963. p. 107-108.

[47] Dawson, 1976. p. 52.

approximately $8 million and these funds were spent for a majority on the efforts of the study groups.[48]

The Power Reactor Demonstration Program (1955) encompassed three rounds of invitations to industry to participate in the program. By April of that year, 3 proposals had been received by the government from the first round of invitations. All three of these proposals were accepted. New England Electric Utilities, Yankee Atomic Electric Company, had a proposal approved. This plant was scheduled to go into operation by 1957, but did not become fully operational until 1961. The cost of the plant was over $55 million. The second proposal came from Consumer Public Power District of Columbus, Nebraska. This plant cost $40 million and did not begin operation until 1963. The final accepted proposal was issued by Detroit Edison Group, and cost approximately $43 million beginning operation in 1964.[49] It is not surprising that at least two of these companies had been part of the government commissioned study teams. All three of these projects received substantial financial support from the AEC.

After the publication of the Brookhaven Report in 1957, corporate representatives became concerned with the possible financial liabilities that would beset the industry in the case of a nuclear accident. Representatives of the large corporations who already were major contributors to the AEC's nuclear program urged the government to pass legislation limiting these financial risks. General Electric and Westinghouse made it clear that they would withdraw from major participation in nuclear development unless government came up with some type of indemnity clause. Former AEC administrator Harold Green stated;

---

[48] Camilleri, 1984. p. 63.
[49] Del Sesto, 1979. p. 55.

> That private enterprise interest in nuclear power would dissipate almost entirely unless some formula were found to enable private enterprise to participate without risking public liability.[50]

Thus, the Price-Anderson Act was passed to guarantee continued industrial participation in the country's nuclear program. The Act guaranteed up to $560 million in federal (taxpayer) accident coverage for nuclear accidents. Utilities were to provide an additional $60 million through joint insurance company pools.[51]

Crossties between the AEC and industry were reinforced by the revolving door of corporate and government personnel. In 1958 John McCone, a former business partner of Steve Bechtel, became Chairman of the AEC. The Bechtel Corporation then hired the AEC's former director of reactor development to head its nuclear efforts.

By the end of 1962, the technical feasibility of commercial nuclear power appeared to be at hand, but economic disincentives still stood in the way of full industry participation. Because the government had footed most of the capital for the nuclear program and costs of plants had almost doubled from their initial estimates, the goal of nuclear energy being cost competitive with fossil fuels did not appear promising for utilities and industry. In order for industry to receive financial gain, competitiveness had to be established. Added financial incentives were provided by the government for the up scaling of the Westinghouse BRW and GE's PRW since these were the technically proven reactor designs and the two companies had been the largest supporters of the

---

[50] Scott Fenn. The Nuclear Power Debate (New York: Preager Pub, 1981). p. 51.

[51] "AEC Staff Study of the Price-Anderson Act.", Atomic Energy Law Journal 16:3, (Fall 1974). p220.

government's nuclear agenda.

Discussion and Conclusions

From the start, federal regulation strove to not only minimize constraints upon the rapid development of the civilian nuclear industry, but also to promote the desirability of this technology's adoption by utilities and the public. The basic regulatory machinery, as well as the goals of the major policies, of nuclear energy utilization were first set forth in the Atomic Energy Act of 1946. The Act spelled out the major elements of the atom's regulatory system by creating the AEC and the JAEC's responsibilities to develop peaceful applications of nuclear technology. There is little question that the Act set up the legal structure for the development of the 'peaceful atom'. These responsibilities were re-emphasized in 1954 with the revisions of the Act. By declaring the legal structure directing nuclear technology in these Acts, the United States Government had set up regulatory agencies and policies before, rather than after experimental programs were in operation and experience with the volatile technology had been accumulated.

There are numerous externalities that were not considered by the Federal Government in these early years of forging American energy policy based upon the atom. It is also not clear whether economic hopes for future national benefits drove industry to support the government's political agenda or vice-versa.

The statements made in the 1946 Atomic Energy Act lead one to question government motivation in pushing this technology's rapid acceptance by industry. "The utilization of atomic energy shall be directed toward

improving the public welfare, (and) increasing the standard of living" (of the American people). For the most part, when this statement was written, the general public was not considered to be an important ingredient in atomic development. This is evidenced by the fact that only elite groups of legislators, scientists and industry representatives were privy to the technology itself as well as the government's intentions. When the Act was revised in 1954 public participation in the licensing process was considered for inclusion into the statute. Even at the inclusion of public participation in the Act, the public had no real incentives at this time to be concerned about the nation's new energy goals. The nuclear rhetoric they were fed by the government through media channels, led the public to believe that it was in their best interest to trust the informed judgements of those in power. However;

> The government was acting on two dangerously undemocratic assumptions: that it knew what was best for the rest of us, including what we should be allowed to know; and what is good for profits is automatically good for the country.[52]

In a democracy, one would presume that the public would have been an integral part of the policy formation process from the beginning. Later, public participation and involvement in the development of the nuclear regulatory process may have mandated that decision makers more closely evaluate their plans. The public could have provided government decision makers with an insight as to what public concerns about safety were, or what information about nuclear power they were lacking.

---

[52] Michio Kaku and Jennifer Trainer. Nuclear Power: Both Sides (New York: W. W. Norton & Co., 1982). p. 235.

The 1946 Act also stated that the government would foster private R&D on a truly independent basis, inferring that the financial subsidies and government monopoly over military nuclear development would not carry over into the civilian development. As of the end of this phase of nuclear power's life-cycle, the economics of the nuclear program indicate that the well - intention goals of the AEC had come nowhere near the independent functioning the government proposed. With the continued financial incentives provided to industry through direct funding of R&D, subsidies for the entire reactor development programs, and the installation of the Price-Anderson indemnity legislation, the AEC functioned to promote as well as control the implementation rate of a technology that was economically unproven.

The monopolization of nuclear research which was conducted at national laboratories gave the government free reign to promote the necessity for nuclear electrical generation by commissioning research that would prove the technology's minimal dangers and maximal feasibility for adoption. The studies which were initially conducted, focused upon technical aspects of commercialization. Since these studies were conducted by interested industries and utilities, they found what the government wanted to hear...nuclear energy was technically feasible to implement for civilian energy production.

The release of the WASH - 740 report, about 12 years after the beginning of the civilian nuclear effort, was the first research attempt to study health and safety considerations related to nuclear power generation. The scientific assessments contained within the report stressed what was conceived to be the 'worst possible accident' occurring at a nuclear power plant. Even then, though the human and monetary costs of a possible accident appeared

staggering, the media reported that such accidents were highly unlikely. The media deferred to the scientific evidence of governmentally approved scientists and industry representatives, reporting their opinions that the worst case scenario was just that. "When such studies are summarized for the public, persuasion techniques are often employed - highlighting selected facts, framing the way facts are presented, or appealing to authority or emotion."[53] The possibility of a major nuclear accident did not stint government's zealous support of the program nor did it initiate an evaluation of nuclear power's potential social costs.

Due to media reporting of the benefits awaiting the American public upon their acceptance of nuclear power, (such as increased standard of living and cheap electricity) the propaganda system designed by the government for the promotion of the 'peaceful atom' was able to obscure more important nuclear issues. Related to these issues which were not considered by the government in nuclear power's early years, author Langdon Winner has made the following comments about nuclear technology;

> Human choices indeed launch particular technological developments, but new endeavors seldom receive the degree of conscious design necessary to satisfy the long term needs of society. Moreover, human choices may substantially be constrained and distorted by the variety of organizational, political, and economic forces. Before diffusing new technologies, governments and businesses do not ask sufficiently pointed questions about the purposes the technologies are supposed to serve, how they should be controlled, or how they should be held to their intended purposes.[54]

---

[53] John F. Ahearne, "Telling the Public About Risks" The Bulletin of the Atomic Scientists (September 1990). p. 39.

[54] Langdon Winner, Autonomous Technology: Technics - out - of - Control as a Theme in Political Thought (Cambridge: MIT Press, 1977), p.41.

Chapter 2

Phase Two of the Life-Cycle 1963 - 1977

Introduction

As the government and industry reflected upon their efforts to institute nuclear power as part of the nation's energy mix, they also began to see that commercialization needed a push. Since technical viability was witnessed by those involved in nuclear efforts, making nuclear power economically competitive with fossil fuels became a necessity for the government program to work. The second phase of nuclear power's life-cycle in the United States was instigated through the symbiotic efforts of government and industry and their design of the nuclear propaganda system, to secure a trend of commercial acceptance among utilities. During this time, promotional efforts sparked a nuclear fervor among those in the energy producing business and no one wanted to be left in the dust.

This period also witnessed the evolution of previously unaddressed problems with nuclear power proliferation. People concerned with nuclear externalities began to voice concerns about the circumspect practices of the AEC and the tacit agreements that underlined the government/industry relationship. Although the voices of some dissenters could be heard, their numbers were few. Because the general public had bought into the 'peaceful atom' campaign they were unprepared to tackle the ominous system the government/industry elites had created and the media was selling due to the fact that they were unable to recognize who was in control. The nuclear flower was beginning to bloom, but its subjective virtue was soon to wither.

The Great Promotion

In December 1963, the Jersey Central Power & Light Company announced the purchase of a BWR from General Electric to be constructed at the Oyster Creek location. This was a historic event for the nuclear power program since the proposed Oyster Creek plant was the first to be built without direct subsidy from the AEC. There was something else unique about this plant; the manufacturer planned to sell the plant to the utility for a fixed sum of $66 million.[55] The utility indicated that the terms of the agreement were arranged based upon the determination that the plant would produce electricity cheaper than a comparable fossil fuel plants. In essence, all New Jersey Central had to do when the plant was completed, was pay the set price and put the key in the door to power it up. Hence, the beginning of the actual commercialization of nuclear power was termed the 'turnkey' period. In the successive year, GE announced that a similar arrangement had been made with a utility in upper New York state. This confirmed the price that was quoted for the New Jersey plant and led other utilities as well as competing manufacturers to believe that the economic competitiveness of nuclear electricity could rival that of fossil fuels.

The first turnkey offer made by GE nudged its major competitor, Westinghouse, to take similar action toward commercialization. The manufacturers' agreed to assume the responsibilities for management of the complete construction project along with making the acquisition arrangements for equipment and materials supplied by other companies. In light of the fixed price bargains offered by manufacturers, eight utilities quickly made contracts for the construction of plants. As with the advertisement of a new cream that

---

[55] Bupp and Derian, 1978. pp. 42-43.

promised to improve a consumer's image, utilities wanted to enhance their financial profile, thus, a 'bandwagon effect' occurred in the power industry.[56] Now that they were commercially accepted, nuclear power plants appeared to promise utilities a wealthy profile ensuring generous revenue at an acceptable level of financial outlay. Plant orders increased in the 60's; in 1963, two reactors other than the New Jersey plant were ordered, seven were ordered in 1965, 21 in the following year, and 27 were ordered in 1967.[57]

In 1962, AEC Chairman Glen Seaborg stated the following with reference to the great promotional period of nuclear power:

> The years from 1963-1967 constituted a crucial period of change for nuclear power. Costs came down further as nuclear proponents drew up plans for 500-megawatt and even 100-megawatt power plants. The first sign of real economic breakthrough came in 1964 with the selection of nuclear power for the Oyster Creek Plant by New Jersey Power and Light Company. More of the new larger competitive nuclear plants were selected as other utilities climbed on the 'nuclear bandwagon'. Roughly half of the new large size commercial power plants which were ordered in 1966 and 1967 were nuclear.[58]

By February of 1964, GE began laying the plans for more turnkey offers. By the end of the initial commercialization period in 1967, GE had received orders for some 70 turnkey plants, while Westinghouse was awarded contracts for six more. Also by this time, other manufacturers such as Babcock & Wilcox and Combustion Engineers had joined the market.

---

[56] Bupp and Derian, 1978. pp.43-45. The 'bandwagon effect' was a phrase that was first applied by Philip Sporn, president of American Electric Power Company. This period is analyzed extensively by Bupp & Derian.

[57] E.S. Rolph, Nuclear Power and the Public Safety (Lexington, Mass: Lexington Books, 1979), pp. 55, 58.

[58] Gyorgy and Friends, 1979. p. 14.

With the acceleration of the commercialization trend as well as the increased size of ordered plants, the AEC began to view the importance of safety issues as a more critical factor in the nuclear program because more of the plants were going on-line and they realized they were laxidasical in their approach to safety. The AEC was engaged in reactor safety research dealing with the physical effects and consequences of serious accidents at power plants such as loss-of-coolant accidents. These tests were being conducted at the National Reactor Testing Station in Idaho.

In 1964, the AEC commissioned an update of the 1957, WASH-740 reactor safety report. The research for this report was based upon the same hypothetical accidents as those in the 1957 study. Even though this effort was pursued by the AEC, the report was not released until 1973 when it was pressured by nuclear critics. The AEC maintained that the 1965 study was never fully completed.[59] When the report was released it was found to estimate that the worst possible accident could kill 45,000 people, injure 100,000 and do $17 billion worth of damage. Radiation could contaminate land downwind from the accident, an area the size of Pennsylvania.[60] The estimates in this report were considerably higher than those of its predecessor. Since the newer plants which had been ordered and were to come on-line were significantly larger than those previously tested in the Reactor Development Program, the AEC did not have adequate data based upon the performance of the newer plants. Even though the estimates of the report were higher than the WASH-740, the numbers were

---

[59] David Burnham, "AEC Files Show Effort to Conceal Safety Perils," New York Times (November 10, 1974), p. 1.

[60] Mckinley Olson, Unacceptable Risk: The Nuclear Power Controversy (New York: Bentam Books, 1976), p. 22.

merely an extrapolation based upon outdated data. This report was hailed by the industry and the press as the ultimate confirmation of nuclear reactor safety.[61]

Related to the question of safety, the Atomic Energy Act was amended in 1965 to extend the indemnity legislation of the Price-Anderson Act for another 12 years. The Act was extended again in 1977 for the same period of time. This meant that atomic energy was still being singled out from all other technologies and provided special government indemnity and limitations on liability. It was also evidence that the government and industry who asked that the Act be renewed, were still unsure of the safety of the plants.[62]

The AEC's misgivings about the safety of nuclear reactor technology were exhibited through the commissioning of an outside task force to investigate whether the emergency safety systems proposed for new plants were adequate. The task force was headed by William Ergen from the Oak Ridge National Laboratory (which also conducted weapons research) and its report was presented to the Commission in 1967. It voiced strong uncertainty regarding the adequacy of the emergency core-cooling systems (ECCS) of nuclear plants. The report recommended improvements in the existing ECCS and simulation models for estimating accident parameters.[63]

With the environmental movement on the rise, attention to radiation hazards resulting from nuclear plant emissions and accidents became a

---

[61] Harvey Wasserman, Killing Our Own (New York: Delacorte Press, 1982). p. 230.

[62] Harold P. Green, "Nuclear Safety and the Public Interest," Nuclear News 15 (September 1972), pp. 75-77.

[63] Elizabeth Rolph, Regulation of Nuclear Power: The Case of the Light Water Reactor (Santa Monica, CA: Rand Corporation, 1977), p. 39.

concern. It was not until 1969, when president Nixon signed the National Environmental Policy Act (NEPA), that environmental groups were able to have some political input on radiation issues. The Act set up the Environmental Protection Agency (EPA) to oversee and direct national environmental policies and monitor the activities of all agencies whose activities might affect the environment.[64]

In 1969 alone, utilities spent $323.8 million on sales and media advertising of nuclear plants and $1.4 million on research and development of the technology.[65] Due to the release of reports such as Ergen's, in the 1970's the AEC was faced with a conflict. On the one hand, the AEC was pleased with the commercial acceptability of nuclear power which they had worked hard to promote but on the other hand, it also had to admit to the incompetence of its safety program.

Commercialization and the Oil Crisis

As more and more orders for new plants poured in, the AEC's regulatory staff was overwhelmed with reviews for these plants. To compound this problem, the AEC had not developed siting, licensing and regulating criteria for the evolving complexities of the new plants.[66] These two problems combined to slow the AEC's licensing and regulating procedures, mandating that the AEC review each application on an individual basis. Despite these

---

[64] Public Law 91-190, "The National Environmental Policy Act of 1969," United States Statutes at Large 1969, Vol. 82. (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 852-856.

[65] Ralph Lapp, "The Nuclear Power Controversy - Safety.", The New Republic (Jan. 23, 1971), p. 18.

[66] Del Sesto, 1979. p. 100.

glitches, the move toward nuclear power did not abate in the 1970's.

On July 21, 1971, James Schlesinger replaced Glenn Seaborg as the Chairman of the AEC. Schlesinger saw the AEC's regulating problems as being further complicated by its role as both promoter and regulator of the nuclear industry. The new chairman made an announcement at a conference of the Atomic Industrial Forum-American Nuclear Society. In his announcement, Schlesinger announced that the AEC would no longer act as nuclear power's promoter, rather as its referee.[67]

In order to alleviate some of the AEC's backlog of reviews, Schlesinger recommended a reorganization in 1972. The Commission was reorganized into three directorates: (1) Directorates of Licensing, (2) Directorate of Regulatory Standards and (3) Directorate of Operation and Compliance. The goal of the Directorate of Licensing was to standardize application reviews, reduce construction permit reviews to a year, and be able to issue an operating licenses immediately for plants that were ready for start-up.[68] Although Schlesinger felt there was a need for AEC reorganization, the impetus for the changes made had more to do with the financial needs of industry than the necessity for safety. The move to reorganize was based primarily upon gaining public confidence by disassociating the AEC from industry and a promotional image. Despite regulatory and safety problems being experienced by the AEC and industry in the 1960's and 1970's, the drive to continue commercialization was not quelled.

---

[67] "AEC to Referee, Not Promote Industry.", Science Vol. 174 (October 29, 1971), p. 478.

[68] Rolph, 1977. p. 65.

Another factor related to U.S. energy production and consumption perpetuated the continued lust for nuclear technology. The price of oil was creeping slowly upward and the increases were being felt by oil-burning utilities who were passing these increased costs along to their consumers. In anticipation of continued increases, oil companies began turning to nuclear power so as not to be squeezed out of the electricity generating market. They saw nuclear power as an answer to securing such energy concerns. During the oil crisis, nuclear power gained a more powerful and favorable public image, as the government and giant energy corporations sold it to the public as a panacea for foreign energy dependence. The press published positive information about nuclear power through advertisements, while the electrical power industry engaged in a massive public relations campaigns and government officials made their pro-nuclear opinions known in light of the oil crisis.[69] "Between 1970 and 1973, as oil prices doubled, orders for nuclear capacity tripled, rising from 20,000 to a staggering 60,000 megawatts." [70]

In 1973, the members of OPEC raised the price of oil from $2.50 to $11 a barrel. At this time, a number of OPEC nations also imposed an embargo and cut off oil shipments to the U.S. as well as some other countries. The U.S was hit hard by the embargo and quickly realized that they had become dangerously dependent upon outsiders for its energy sources. Nuclear power received notable endorsement due to these circumstances. 'Project Independence,' a program conceived by President Nixon and later initiated by

---

[69] Todd H. Otis, A Review of Nuclear Power in the United States (New York :Preager Press, 1981). p. 147.

[70] Peter Pringle and James Spigleman, The Nuclear Barons (New York: Holt, Reinhart & Winston, 1981), p. 332.

President Gerald Ford was launched. This program aimed at having the U.S. get half of its electricity from nuclear power by the year 2000 and envisaged the construction of 200 large nuclear power plants over the next decade.[71] The nuclear industry benefitted from the oil crisis for a short time, but the long range effects were not to be felt by the industry until the late 70's.

It is important to note changes that occurred in the governmental organizations that regulated the nuclear industry because although they appeared to show efforts to strengthen regulation, they were merely logistical. The impetus for these changes will be discussed in the following sections.

In 1974 the most comprehensive study undertaken of nuclear accident risks was performed by the AEC. The objective of the study was to make a realistic estimate of public risks that could be involved in a large nuclear accident. This study was also supposed to supplant the earlier WASH-750 report. The study was headed by Professor Norman Rasmussen of MIT, hence, it has been referred to as the Rasmussen Report. A large majority of the staff under Rasmussen's guidance were either AEC personnel or closely aligned with the nuclear industry. The report found that the most likely cause of a core meltdown was either a loss of primary coolant, followed by failure of the ECCS or other backup cooling systems and radiation releases would be of minimal harm to people in the surrounding area.[72]

This study indicated that the *most likely* core meltdown accident could occur once every 17,000 years per plant. It also concluded the following:

---

[71] Peter Stoler, Decline and Fail (New York: Dodd, Mead & Company, 1985) p. 87. See also Joseph A. Camilleri, 1984. p. 175.

[72] United States, Atomic Energy Commission, Reactor Safety Study, An assessment of Accident Risks in U.S. Commercial Nuclear Power Plants, Rpt No. WASH-1400 (Washington D.C.: Atomic Energy Commission, 1974).

> the risks to the public from potential accidents in nuclear power plants is very small....The consequences of potential reactor accidents are no larger, and in many cases are much smaller than those of non-nuclear accident....Non-nuclear events (a majority of which are natural occurrences such as lightning and earthquakes) are about 10,000 times more likely to produce large accidents than nuclear plants....The only way that potentially large amounts of radioactivity can be released is by melting the fuel in the reactor core.[73]

The report, among its other strange analogies, also parallels being killed by a meteor to the likelihood of death from a nuclear accident. And that an individual would have a 1 in 3,000,000,000 chance per year to sustain injuries caused by a nuclear accident. This report was widely used by government and industry as an assurance of the safety of nuclear reactors and was also carried widely by the press. It was looked at as the final word on reactor safety and was used by nuclear proponents in AEC hearings.

Amidst the turmoil of the oil crisis, efforts to delineate the appropriate functions of nuclear regulation continued. The AEC structure was again changed in 1975 when the Energy Reorganization Act went into effect on January 1. This Act attempted to divide the promotion and regulatory functions of the agency into the Energy Research and Development Administration (ERDA), which was responsible for the promotional of reactor development, military uses, and non-nuclear energy R&D; and the Nuclear Regulatory Commission (NRC) which oversaw the licensing and regulatory functions. The NRC was similar to the AEC, in that its commissioners were appointed by the President. Subsumed under the AEC were the Atomic Safety and Licensing Board (ASLB) and the Atomic Safety and Licensing Appeal Board (ASLAB). The NRC also conducted some evaluation of nuclear reactor safety.[74]

---

[73] United States, Atomic Energy Commission, 1974. pp. 1, 2, 10.
[74] Gyorgy and Friends, 1979. p. 23.

Harold Green describes the AEC during this time despite these changes as

> by far the largest entrepreneur in the industry, the largest consumer of the industry's materials and services; it plays(ed) an active role in promoting the industry and encouraging and subsidizing private interests to enter the industry at the same time it is the potential competitor of these interests; and, finally, it licenses and regulates the private firms which it has encouraged and subsidized.[75]

The private as well as governmental interests in nuclear power at this time had a considerable controlling power over how the media reported and advertised nuclear power. The aspects of the propaganda model which points to the political/economic interests influencing reportage of nuclear issues is confirmed by the GE and Westinghouse domination of the nuclear market, their corporate ownership of mainstream media outlets, and the crossover of industry personnel to government positions and vice-versa. These influences predict, how the media act in channeling political information, reinforcing the government and industry pro-nuclear agenda.

> The media make major contributions to schema formation and development by providing the public with partially processed information in various domains of knowledge and by signaling the relative importance of stories. This information is particularly pervasive where people have few chances to acquire information through personal sources and the opinions of authorities are the only ones made available.[76]

Not only was the nuclear information framed by the media's reliance upon official government and scientific sources, but the media are also influenced by market mechanisms of advertising as a means of gaining revenues.

---

[75] Fenn, 1981. p. 53.

[76] Doris Graber, Processing the News (New York: Longman, 1988). p. 203.

Some authors who have analyzed the media exposure of utilities' efforts to promote nuclear power appeared surprised to find that a rosy picture had been painted with reference to safety. It is possible that if they had paid closer attention to nuclear power reports over the years, they might not have been so surprised. In 1977, for example, Virginia Electric & Power Co. ran full page ads in Washington papers stating:

> The only thing frightening about nuclear power is the thought of facing the 1980's without it. . . One fact that stands out about nuclear generation is that it's safe. If we're going to have the electricity we'll need in the 1980's we'll need nuclear power as part of a balanced generating system.[77]

The article continues with a quote from VEPCO's advertising manager who when questioned about the ad's one-sided account stated "The advertisements are not promoting anything. They are simple statements of fact on the energy situation and how it affects our customers."[78] Ads similar to this one were not uncommon during the commercialization period. It fact, if one juxtaposes promotional ads with editorial reports of the government safety studies, and new plant openings, one would find a well supported pro-nuclear bias.

Great strides had been made by the government in convincing the public and utilities that nuclear power was economically good for them. However, people questioning the government's motivation as regulator and promoter of the industry were being heard. Hence when the regulatory bodies were reorganized, following the establishment of the NRC in 1974, there was a

---

[77] Joanne Omang, "Group Assails VEPCO Ads on Nuclear Power as One-Sided.", The Washington Post (Dec. 13, 1977). p. C8.

[78] Ibid.

pause in the issuance of nuclear permits and licenses while the new commission undertook organizational efforts.

In 1977, this organization was again changed logistically when President Carter signed the Department of Energy Organization Act. The ERDA was included under the DOE. The JAEC in Congress was abolished and its duties were taken over by the Federal Power Commission, and committees from the Department of the Interior. The DOE was established to encourage the development of non-nuclear sources of energy, but there continued to be a pro-nuclear bias which was reflected in the budget and staff selection. Eighty-three percent of the ERDA's staff were former AEC employees.[79]

It was during the second phase of nuclear power's life cycle that it moved form the turnkey or commercialization period to a time when an oil crises sparked the need for increased development of alternative energy sources. But, this phase also experienced increased problems in the public realm. Issues which were previously invisible or unattended to by the general public not only developed but demanded closer scrutiny of industry and government practices. It was this scrutiny which necessitated action.

Public Involvement and Related Issues

As the events unfolded in the late 1960's and early 1970's, opposition to nuclear power increased in numbers and strength. It was during this time that citizen's groups and the public became sensitized to the problems of nuclear power. In an effort to influence the decision making process of the

---

[79] Ralph Nader and John Abbotts, The Menace of Atomic Energy (New York: Norton, 1977), p. 69.

AEC with reference to licensing and construction, citizen groups began to participate in the AEC public hearings.

On October 5, 1966 there was an accident at the Enrico Fermi fast breeder reactor, 30 miles from Detroit, Michigan. This was the site of a partial fuel melt-down during start-up operations. An explosion of the core was possible but luckily it did not occur. In 1970, a Commonwealth Edison plant in Illinois, went out of control and radioactive iodine was released into the containment vessel. It was discovered that the accident was due to problems with the ECCS. At the end of 1974, the AEC had found 3,333 safety violations at 1,288 nuclear facilities it inspected. This included laboratories as well as atomic weapons plants. Ninety-eight percent of those posed a threat of radiation exposure to the general public or workers. The AEC imposed punishments for only eight of those violations.[80]

Numerous other accidents had occurred at nuclear facilities over the years, but the AEC and later the NRC did not fully disclose the causes of these accidents nor the extent of the damages or risks to public health and safety. Perhaps one of the most important issues related to nuclear power was that of the hazards of radiation and the possibility of nuclear accidents. All forms of media were utilized to emphasize the environmentally positive character of nuclear power and the safety of the industry. This nuclear agenda had long been set by the 'establishment'. From the beginning, the media reported health and safety issues with a slant, placing higher priority on economic interests than on individual welfare. The media also, consistently framed nuclear news to minimize negative appearances, while protecting big business and government

---

[80] Gyorgy and Friends, 1979. p. 117-18.

agencies instead of probing key factors to uncover institutional malfeasance.[81] The harms of radiation, for example, were only 'discovered' after years of nuclear bomb tests were conducted in Denver. Even after environmental contamination resulting from these tests was scientifically proven, the media could cover their tracks. They reported that the government had lied to them and also conceded that it didn't really matter because the actual harms were minimal, citing official sources in their support.

Interested members of the public who were able to see through this designed smokescreen were publicly pronouncing their concerns about radiation releases from power plants. These nuclear dissenters were given an important political outlet in 1969 when President Nixon signed the NEPA. Up until the signing of this Act, there was little that environmentalists could do to gain substantive political input. The Act set up the EPA and provided a mechanism enabling environmental groups and other concerned citizens to take legal action in contesting nuclear power licensing cases. Section 102 of the Act [82] required the AEC to evaluate and assess the environmental impact of all agency sponsored programs as well as disseminate environmental impact statements on activities that may adversely impact the environment. The AEC opted for a narrow interpretation of the Act and ensured that radioactivity emitted from nuclear facilities was well within acceptable levels.[83]

A case known as the Calvert Cliffs Case challenged the AEC under the new EPA guidelines and citizen's groups came foreword into the political

---

[81] Lee & Solomon, 1990. p. 201.

[82] Public Law 91-190, 1970. pp. 852-856.

[83] Harold P. Green, "Nuclear Power Licensing and Regulation," The Annals 400 (March 1972), pp. 124-25.

arena. Calvert Cliffs was the name for a proposed site of a nuclear power plant in Maryland. Nuclear critics challenged the AEC's licensing of the project due to the EPA standards and the proximity of the plant to the Chesapeake Bay. The Chesapeake Environmental Protection Agency (CEPA) argued that under the NEPA, the AEC was required to evaluate the possible environmental impacts of the proposed plant and issue a public statement. The Commission did not issue a statement and interveners filed a petition in the United States Court of Appeals in November 1970. The NRC issued a statement but the CEPA felt it was not complete, so a second petition was filed with the court.

A decision was handed down by Judge James Wright on July 23, 1971. In this decision, Judge Wright declared

> it was the duty of the AEC, like all federal agencies, to take environmental values fully into account, and that attention should be given to *all non-radiological effects* of the proposed plant....The Commission's crabbed interpretation of NEPA makes a mockery of the Act.[84]

This decision was a milestone for citizen's groups and environmentalists. Because not only was the AEC forced to assess its regulatory role and comply to the new Act, but the topics of nuclear power safety and radiation were thrust into the public eye.

The issue of the hazards of radiation exposure come on the scene in 1971, after the release of a 10 year study which focused upon occupational radiation. Researcher Thomas Mancuso and his associates studied the government's nuclear facilities at Hanford, Washington. This study determined that over 6 percent of the deaths of Hanford workers were caused by radiation.

---

[84] Thomas W. Keating, "Politics, Energy and the Environment: The Role of Technology Assessment," American Behavioral Scientist 19 (September-October, 1975), pp. 62-64.

The DOE disagreed with Mancuso's conclusions, citing that the increased cancers could have been unrelated to radiation and that his statistical methods were unconventional. The media sided with industry and government opinions about the studies and attacked Mancuso's reputation condemning his research methods and contending that an evaluation of carcinogens other than radiation were neglected and that such carcinogens played a larger role in cancer development and worker mortality.[85] Six years later, the government withdrew its financial support of Mancuso's research.[86] Not only was occupational release of radiation (low-level) quickly becoming a topic of controversy, but radiation that could be released from a nuclear accident (high-level), was also a growing public concern. The most striking aspect of AEC hazard regulation was the infusion of promotional biases into scientific discourse. Only limited efforts were made to monitor the health histories of persons exposed to high radiation doses, such as nuclear industry workers.

The AEC consistently downplayed the harmful effects of radiation throughout this period, with the public only learning sometime later that many grossly irresponsible decisions had been made in setting protection standards. Many of the AEC's deliberations on this subject appear to have been to purposely concealed from public view so that the AEC's research programs would not be held back.

Prompted by public intervention and negative scientific assessment of the ECCS, the AEC in 1972, held a 'Public Rule-Making Hearing' to discuss public concern over the safety of the ECCS. This hearing lasted over a year and

---

[85] Wasserman, 1982. p. 144.

[86] John W.E. Goffman and Author Tamplin, Poisoned Power: The Case Against Nuclear Power Plants (Emmaus, PA: Rodale Press, 1971), pp. 69, 98.

numerous advocates as well as objectors' arguments were heard dealing with the safety of nuclear technology. These hearings brought even more needed attention to the issues of nuclear power safety.[87] Of the ECCS, a Union of Concerned Scientist's publication had the following to say:

> The public is being asked to accept the word of the nuclear industry that the currently installed emergency core-cooling system can function properly to prevent the most dreaded of disasters. The fact remains, however, that there has only been limited testing of the emergency core-cooling system-and some of the tests reveal signs of defects and indicate that the ECCS might fail if actually called upon. Sworn testimony of experts in the field reveals that the effectiveness of this critical reactor safety system has not been properly demonstrated.[88]

As a result of the publication of reports such as the WASH-1400, in 1974 and the Public Rule-Making Hearings, scientists, environmentalists and average citizens continued to question the AEC's regulatory procedures and safety analyses. The Union of Concerned Scientists (UCS) was especially disturbed by the conclusions drawn in the WASH-1400 report. The UCS felt that the AEC had used discredited safety analysis methods, which assumed that all credible design errors and accident sequences had been identified. These methods also assumed that people living in the vicinity of a power plant could be quickly evacuated, and underestimated the consequences to public health and property.[89]

As with earlier studies conducted by the AEC that predicted and modeled reactor accidents and their probability of injuring the public, a 'safe nuclear' bias could be witnessed. Although the study was headed by an outside

---

[87] Del Sesto, 1979. p. 171.

[88] "What You Should Know About the Hazards of Nuclear Power," Union of Concerned Scientitst (Cambridge, 1979).

[89] Dawson, 1976. pp. 213-214.

investigator, the staff under his direction was clearly pro-nuclear, with its members coming directly from the AEC or the nuclear industry itself.

Provisions were made for public inclusion in AEC licensing hearings in the 1954 Atomic Energy Act but were not taken advantage of until this period, due to public concern for safety. It was through the efforts of small public groups that people first realized the incredible strength of the nuclear power establishment and their own relative impotence. During the AEC's hearings, there was an incredibly ritualistic treatment of the public which seemed to alienate them from both government and big business interests involved with nuclear power development.

Although members of the general public, organized environmental groups and independent scientists were making strides in their efforts to intervene in the nuclear establishment, considerable barriers stood in their way. The AEC had a history of precluding several categories of data - - so-called 'privileged information' - - from public access. As Keating puts it;

> While a substantial amount of information is (was) made available for public scrutiny, there are several categories of data that are routinely denied the public. Among these categories of "privileged information" are things such as opinions, evaluations, analyses, deliberations, recommendations, advice, and other AEC internal memorandums; information supplied to the Commission in confidence, along with the names of those giving the information, reports comparing the particular reactors; reports on inspection visits to nuclear manufacturers and suppliers; and propriety information.[90]

Interveners also had a difficult time retaining attorneys to plead their cases at AEC hearings. Smaller citizen groups did not have the monies available for highly specialized lawyers and their own technical understandings could not

---

[90] Keating, 1975. p. 57.

rival those of the nuclear giant. At the hearings, over eighty percent of all testimony given by the AEC and industrial witnesses was couched almost entirely in terms of highly complex scientific and technical data, as compared to some seventeen percent for anti-nuclear groups.[91]

In 1974, Daniel Ford, a member of the Union of Concerned Scientists stated the following of AEC practices:

> For the most part, we sense that people in this country generally have thrown up their hands in despair when it comes to any serious discussion of the nuclear power controversy...Instead they have trusted the AEC to make expert impartial decisions on nuclear safety matters in the public interest. In fact, however, the AEC has acted much more to promote nuclear power than they have to protect the public health and safety....The fact that the agency entrusted with making the safety decisions cannot itself be trusted is a factor that must weigh heavily in the country's acceptance or nonacceptance of nuclear power. No one doubts the need for strict controls over nuclear power, and if the agency ensuring such strict controls is seriously compromised, then it's a major institutional barrier to the society's use of nuclear power.[92]

By the late 1970's it was well known by those with an interest in the nuclear power debate, that industry and government were failing to protect the public and afford interveners equal ability to influence nuclear policy. The death of plutonium worker Karen Silkwood in November 1974 also had people very concerned. Some believed that she was killed for exposing unsafe practices at the Kerr-McGee plant in Oklahoma. If this was true; how much was going on in the nuclear industry that the public was never told?

---

[91] Del Sesto, 1979. pp. 187-188.

[92] David Burnham, "AEC Files Show Effort to Conceal Safety Perils," The New York Times (November 10, 1974), p. 1.

Economic Aspects

Some mention should be made of the fact that although the civilian nuclear power programs had been successful on their own terms in the early stages of program development, the AEC and the nuclear industry failed in almost every case in terms of cost estimation and predicting time schedules for construction of new facilities. There was also a clear lack of comparison of nuclear technology with other ways of generating electricity, such as solar power, geothermal power or hydroelectric power.

The turnkey period and the ensuing oil crisis helped to perpetuate the drive to go nuclear. But, in analyzing the economics of the fixed sum bidding process, it was found that commissioned plants which were not turnkey offers served as a more realistic estimate of the true cost of nuclear power plants. The turnkey plants made nuclear power appear to be substantially cheaper for generation of electricity than fossil fuel plants, when in actuality they were not. The government and industry nuclear club devised the fixed price offers to entice utilities and the American public to believe cheaper was better. Of the turnkey bids, Philip Sporn stated; "It is my judgement a concept, if generally adopted, can lead only to the eventual decline in the technological and economic well-being of the electric power industry in both the utility and manufacturing segments."[93] Although utilities were duped, for the time being, once the AEC was being questioned openly about its safety record and practices, new information came to light about nuclear's interested parties.

---

[93] "United States Congress, Hearings Before the Joint Committee on Atomic Energy." Nuclear Power Economics 1962 through 1967 90th Congress 2nd Session, (Washington, D.C.: U.S. Government Printing Office, 1968), pp.45-46.

The Rand Corporation for instance, reported that GE and Westinghouse lost on the order of $875 million to $1 billion on thirteen turnkey plants constructed between 1963 and 1967. With the exclusion of one plant, this averages out to losses of $73 to $78 million per plant.[94] The existence of the GE and Westinghouse turnkey offers to utilities was an important factor in their decision to buy nuclear plants. The rationale used by leading manufacturers who offered these bids, was that substantial monetary losses were acceptable early on because greater benefits would be received when commercialization took hold. The prominence of the manufacturers who took the ground-breaking risks in the market would be guaranteed a majority of future plant sales.

The most aggressive nuclear promotion in the private sector came from Westinghouse and GE, although others were also vying for leverage. The two firms made large capitol commitments to nuclear R & D and production facilities, engaged in aggressive political lobbying, and funded pro-nuclear public relations campaigns. GE's annual report noted in 1972, that their potential revenue base in a nuclear plant was some six times that of a fossil fuel plant. This was because they could supply the reactor, the fuel, and fuel re-loads, as well as turbine generators and auxiliary equipment.[95] The former president of Westinghouse's Power Division, John W. Simpson, stated in 1973, "Between now (then) and the year 2000, the potential return to Westinghouse, just assuming it maintains its present share (38%) of the nuclear market, could be $300 billion."[96]

---

[94] "United States Congress, Hearings before the Joint Committee on Atomic Energy", 1968. pp. 50-51.

[95] Nader and Abbotts, 1979. p. 265.

[96] Business Week (February 24, 1973), p. 68.

The corporations that produce and sell energy to the nation are from an intricate pattern of intense economic power. Control of the Unites States energy economy increasingly lies in relatively few hands. The companies at the core of this power have been subsidized by funds from the government to support the party line of nuclear power proliferation. An example of this concentrated power can be seen in the positions held by those in the nuclear industry and government that guaranteed continued support and funding of the nuclear technocracy. Although the names of these men may appear to be inconsequential, the positions they held were not.

As of 1973, Paul Austin, the president of the Coca-Cola company of Atlanta, simultaneously served as director on the board of GE as well as Morgan Guaranteed Trust. The Trust company was a major investment bank and principal stockholder and voter in many utilities and nuclear corporations. A colleague of Austin's, also on the Morgan trust board was George P. Schultz who was the former Treasury and Labor Secretary under the Nixon administration and later served as Secretary of State. Along with Schultz, former Secretary of Education, Health and Welfare, Casper Weinberger joined Bechtel as special council to the firm. Bechtel also retained the services of a former general manager for the AEC after he left government. While on the Morgan Trust Board, Schultz was president of the Bechtel Corporation, one of the largest nuclear engineering and construction companies. He held this position for eight years. Simultaneous members of the Hanover Trust Board, also an investment firm owning utility stock, were Howard Henley director at GE and George P. Zipf, president of Babcock & Wilcox, the country's fourth largest reactor

vendor.[97]

To further substantiate the crossovers of personnel from industry to government and vice versa, in 1976 a report published by anti-nuclear group, Common Cause, analyzed the employment records of to government nuclear officials. The study reported that 72 percent of the NRC's top 429 employees had been employed by private energy companies and that 90 percent of these employees came from companies with which the NRC had current contracts and licenses. In the introduction to the study Common Cause wrote that their findings, "point to potential conflicts of interest, and the possibility of serious agency bias, throughout the executive bureaucracy."[98] In sum, the U.S. utility sector's tilt toward nuclear power seemed the product of an ambitious core of powerful elites in both industry and government, who saw in technology a prospective vehicle for institutional growth.

Trend Toward Decline

The culmination of the previously mentioned factors of public dissent and negative economics of nuclear power, eventually led to a steady down turn in the number of nuclear plants ordered in the late 1970's. Issues of safety which prompted government reorganization and restructuring of licensing criteria slowed the pace of plant construction. Irvine Bupp concludes

---

[97] "Disclosure of Corporate Ownership," U.S. Senate, Committee on Government Relations (Washington, D.C.: U.S. Government Printing Office, 1974) For more detailed explanation see; Gyorgy & Friends, 1979. p. 162.; "Room from the Top for Ex-Cabinet Men," Business Week (September 1, 1975), p. 19-20. ; and Steve Cohen, "The Political Economy of Nuclear Power (1945-1990): The Rise and Fall of an Official Technology" Journal of Economic Issues 24:3 (September, 1990), p. 803.

[98] Common Cause, "Serving Two Masters" (Washington, D.C., October, 1976), pp. i, ii.

the following with reference to public intervention and nuclear economics of the second phase in nuclear power's life-cycle:

> Aside from the direct material costs of additional safeguards, the nuclear critics have affected power plant costs in three ways. They have slowed down the plant licensing and construction process....Delays invited unanticipated inflationary effects because costs were actually incurred later than anticipated. Second, costly changes had to be made in plants that were already partially constructed. Third, environmental assessment reports demanded by public interveners, increased the administrative and legal complexities of the licensing process. Under new rules, the AEC could no longer waive certain procedures for plant siting and construction that allowed the initiation of plant building without the actual receipt of a construction permit.[99]

As the public was slowly realizing, the government had carefully constructed a climate where the only decisions that appeared rational to decision makers were those that had already been tactily decided on economic grounds and bias scientific evidence. Although these forces did not change the government's pro-nuclear line, they did contribute to a slowing of industry implementation and government regulatory processes.

The costs to corporations and the government were increasing as those in the nuclear industry realized the distorted results of the turnkey bids had not made nuclear power 'cheaper' than that generated from fossel fuels. The promise of an energy source too cheap to meter was an economic illusion, as utilities also found it increasingly more difficult to receive financial backing from loan and trust istitutions. The nurtured nuclear flower was losing its color by the end of this phase in its life-cycle and the nuclear landscape was changed remarkably.

---

[99] Paraphrased from Bupp and Derian, 1978. pp. 157-160.

Chapter 3

Phase Three of the Life-Cycle 1978 & TMI

Before the Accident

The trend toward decline of the nuclear power industry was already developing in the mid-1970's, prior to the accident at Three Mile Island (TMI). As stated previously, issues of safety and the regulatory process were of paramount concern. In 1978, the NRC received accounts on 2,835 "reportable occurrences"[100] Every nuclear plant in operation that year had at least one unscheduled shutdown. Although these 'occurrences' were reported and known by the NRC and several significant accidents at power plants were on record, the regulatory agencies of the Federal Government (AEC and at this time NRC) had not refused one nuclear plant a license that had been applied for properly. In the late 70's the trend toward anti-nuclearism was gradually accelerated, and in 1978, there was a sharp upturn in opposition. Influenced by declining economics and new plant requirements, the pace of plant cancellations continued unabated throughout the second half of the decade. The delineation of this phase of nuclear power's life-cycle is central to the fact that no new plants were ordered in the United States after 1978.[101]

With reference to the growing opposition among organized citizen's groups; in April 1978, 6,000 people protested against the plutonium

---

[100] Joanne Omang, "Nuclear Power Plants Around the U.S. Record 2,300 Glitches in '79," The Washington Post (July 14, 1980). p. A20. *"Abnormal occurrences" are referred to as incidents or events that involve a variance from the regulations, such as; malfunctions of safety-related equipment, personnel overexposure, and radioactive releases above prescribed limits.*

[101] Morone, et al., 1989. p. 87.

factory near Rocky Flats, Denver, while in South Carolina at the Barnswell reprocessing plant, 2000 people marched in protest resulting in approximately 280 arrests.[102] Much of the opposition was due to the heated debate in the scientific community over the safety of nuclear plants and the hazards of radiation.

Prior to the accident at TMI the nuclear regulatory agencies of the Federal Government maintained that standards that had been set for radiation emissions from nuclear plants were safe. However, these acceptable levels of emission had been indiscriminately raised and lowered by the government over the decades. Nuclear scientists working for the industry advised government officials that there was no reason to lower the radiation emission standards because emissions resulting from power plant operation were extremely small and didn't differ much from what already existed in the natural environment. The bulk of governmentally funded research used to establish low-level emission standards have derived these standards by extrapolating from the known risks of exposure to high-level radiation and then comparing the actual emission from plants to background radiation.[103] The information not discussed in this research is that any radiation, background or otherwise is harmful to people and the environment, however minimally. A National Academy of Science report referenced in a New York Times article estimated that 2,000 additional cancer deaths between 1975 and 2000 would result from the use of nuclear power.[104] Even if this number of deaths were lowered considerable risk

---

[102] H. Kohn, "Anti-Nuclear Spring Offensive.", Rolling Stone Magazine, No. 268 (June 29, 1978), pp. (13, 33-35.)

[103] Fenn, 1981. p. 117.

[104] Richard D. Lyons, "2 Reports see Risk s in Nuclear Future," The New York Times (April 30, 1979). p. A1.

was evident. By establishing a threshold for emission standards, the government conveyed the idea to the public that a certain level of radiation exposure above normal levels, presents no concernable risk.

A study conducted by West German Scientists, released in 1979 stated that the estimates the NRC relied upon for its formulation of emission standards, vastly underestimated the doses of radiation that people living near power plants received. The study pointed out that the NRC had neglected to consider food chain elements irradiated and ingested by people and that the NRC figures were; "Either at the lower end of the range given in the literature or far below the values that may be regarded as realistic."[105] In understating the health effects of low-level radiation, the much greater dangers posed by the possibility of major accidents at nuclear plants was virtually ignored. Also related to the safety and operation of nuclear power plants is the quality of support provided by the material suppliers for their products. These are especially important to consider when investigating the accident at TMI.

Plant Design

In order to view how the operating utility of the TMI plant, its corporate material suppliers and the Federal Government contributed to the accident, it is necessary to back track a bit, chronologically. The TMI Unit-2 reactor which experienced the accident, received its construction permit from the AEC on November 4, 1969, its license to operate on February 8, 1978 and began

---

[105] Dick Brukenfield, "Are Nuclear Plants Unsafe - Even Without Any Mishap?" The Washinton Post (Nov. 11, 1979). p. B4.

commercial operation December 30, of that same year.[106] General Public Utilities (GPU) the nation's 14th largest publicly owned utility, owned the Metropolitan Edison Company (Met Ed) which was the subsidiary who operated and owned 76 percent of the TMI plants. This ownership was shared with two other GPU utilities; Pennsylvania Electric Company and Jersey Central Power and Light (JCPL) who each owned 25 percent of the plants. The Unit-2 plant consisted of a Babcock & Wilcox PWR, a Westinghouse turbine and a plant design by Burns and Roe.

As of 1968, the TMI Unit-2 plant was intended to be constructed under a design contract made between JCPL and Burns and Roe for their Oyster Creek location. Due to labor problems at the Oyster Creek location, construction of a second plant was deferred to the TMI site. For reasons stated in the President's Commission Report, the company of Burns and Roe was retained as the constructor of the plant even though the TMI Unit-1, which was designed and constructed by Gilbert Associates, was a better architect engineer. The primary reason for the retention of the original constructor was to forego extensive construction and operation delays. Since the Unit-2 was not designed by the same contractor as the Unit-1 reactor, minimal changes in construction plans were done to make the units as similar as possible without considerable delays. As of the time the decision to change the reactor site was made, the GPU policy of "minimizing delays" was one that continued throughout the entire project.

---

[106] J. G. Kemeny, et al. The President's Commission on the Accident at Three Mile Island, the Need for Change: The Legacy of TMI, "Role of the Managing Utility and its Suppliers" p. 6.

Although Met Ed was the primary licensed operator of the Unit-2 reactor, it actually played a minimal role in the design of the plant. Engineering activities such as systems modifications were handled by Burns and Roe, B&W and GPU engineering personnel. Of the plant design and changes which were made, then Met Ed President commented the following in his deposition to the President's Commission;

> There were opportunities for general input available during the period of construction, and yet I must admit that sometimes a person might observe a proposed change, and *it could be too late;* maybe it wasn't identified on the drawing. After it was installed, one might have said, you know theoretically it makes no difference where you put *that particular valve,* but from a practical operating standpoint, it would have been a lot better to put it here instead of there . . . .I remember walking through the plant with Gary Miller and/or Jack Herbine, and various things might have been pointed out, like the valve for example; this shouldn't be here, it should be here, or we should have done this, or we should have done that. I guess you learn from experience. . .It does take a little practical experience.[107]

Uncertainties in the plant design such as these expose the inexperience of utilities in their ability to effectively interact with material suppliers and plant designers at one of the most crucial stages of reactor construction. The above statement made by Met Ed President is of particular interest because one of the causes of the TMI accident was contributed to the malfunctioning of a Babcock & Wilcox (B&W) valve.

Another aspect of plant design which contributed to the accident was that of the control room panels and the emergency warning signals. The

---

[107] Creitz deposition, quoted in J. G. Kemeny, et al. The President's Commission on the Accident at Three Mile Island, the Need for Change: The Legacy of TMI, "Role of the Managing Utility and its Suppliers", 1979 (emphasis added) p. 31.

control room panel designs were developed initially by Burns and Roe and then modified in collaboration with B & W, but, GPU made the final decision on what design would be used. Neither B & W nor Burns and Roe consulted with any outside experts in human engineering for functional panel design of a nuclear control room. As with the rest of the plant design and construction, Met Ed's policy of 'minimal engineering changes' stood, even though the panel design was not tested with human interaction specific to the Unit 2.

The government's role in the accident is directly related to its approval of the plant's operating license.

> The NRC had received reports on a total of 11 B & W valve failures prior to the accident at TMI. In nine of these failures the valve failed in the open position, similar to what occurred at TMI. An official NRC report was not published until over two months after the TMI accident.[108]

There were also other reports which the NRC overlooked, dealing with operator complaints about the panel design and the obscured placement of important warning lights. Since B & W had built and designed other operating plants and problems with these plants were known by the NRC, why then was the license given to TMI 2?, and why weren't problems with plant operation revealed through NRC inspections?

The conclusion that can be drawn from the government's neglect to recognize such reports, points directly to the established relationship with the large corporations of B & W and Burns and Roe. These companies were part of the group that participated in the commercialization phase and helped the government sell the nuclear program to the utilities. If NRC reports of the valve

---

[108] Summarized from The President's Commission on the Accident at Three Mile Island, the Need for Change: The Legacy of TMI, "Role of the Managing Utility and its Suppliers", 1979

and other related technical problems at operational plants had been revealed prior to the accident, it would have cost the industries large amounts of money to fix the faulty valves. It also may have cost the companies future orders and slowed nuclear power's speedy adoption by utilities during the commercialization phase.

It should be mentioned here that the results of the Kemney Commission investigation on the role of the managing utility and its material suppliers, released after the accident, found considerable utility/industry negligence in the design and operation of the plant. This is a rather interesting analysis when one considers that the government was ultimately responsible for deciding whether the plant was fit to operate.

The Media and Nuclear Propaganda

The accident at Three Mile Island is an excellent case study that allows one to witness how the interests of informed elites are supported by the mainstream media, tightly controlling the information received by the public about TMI and nuclear related issues. The development of the nuclear political agenda is witnessed in the preceding chapters through documentation of government financial support, legislative efforts, industrial cooperation, and overall promotion to the general public through the media. By viewing how these systems historically interacted and supported a propaganda system, one can see how the media played a predictable role in its coverage of the accident.

> When something happens that is ambiguous in meaning, provokes people's interests, and raises doubts demanding resolution, the popular urge of (the media) is to represent 'what really happened' in dramatic

ways.[109] But, there must be a final resolution (at least in the public mind) in keeping with the overall rhetorical vision evoked by the drama.[110]

Historically, media portrayal of nuclear power appealed to the emotions of the population in a melodramatic way by reporting the government's efforts to turn an 'immoral' technology into a 'moral' one, ie., using atomic bomb technology to provide power to the country. Hence, every new nuclear development reported through the media conveyed an increasingly better view of the technology than had been initially constructed. Selectively framed information, partial information, and the gratuitous reporting of pro-nuclear statements from interested parties by the media, obscured important information about nuclear safety and regulation from public consideration. The accident at TMI provided the media with another melodramatic event and an opportunity for the government to right a wrong and vindicate itself by mandating changes in nuclear regulation that could be promoted as 'good', thus resolving the conflict and allowing the negative image to drift from view. By looking at the accident in this way, and keeping in mind the economic commitment that had been made to secure nuclear power's development, one would expect the media coverage of the accident, to; initially question government actions, direct public attention to government/industry malfeasance, promote beneficial changes made by the government to secure greater plant safety, and allow critical discussion about the accident to drift from public view. When one looks at the problems resulting from the accident at TMI and asks; How did this happen? How did we get here? Who's to blame? and then asserts Find out! Do something! Stop this

---

[109] Dan Nimmo and James E. Combs, Mediated Political Realities (New York: Longman, 1983). p. 14

[110] Ibid., p. 15.

machine I want to get off!, the springs are wound too tight, for the public alone to bring the system to a screeching halt.

The promotional practices of TMI's operating utility and media coverage prior to the accident are important to consider in order to view the overwhelming nature of the propaganda system related to a specific plant's operations. Met Ed began issuing press releases on the status of TMI on a weekly basis in 1974. These releases were written by engineers and relied upon technical and scientific jargon to communicate with the media as well as the public. Due to the fact that most mainstream, media science writers and the general public were and continue to be unfamiliar with that type of highly technical information, the releases took a backseat to more current, understandable feature stories.

As with the public licensing hearings held by the AEC/NRC to appease concerned citizens, the information released to the media by Met Ed, made no effort to invite interest, understanding or substantial input from the general public. Even though Friedman (1981) and other authors state that part of the communication problem of the Met Ed releases can be attributed to the utility engineers assigned to writing them, larger forces had an impact on the tabling of the information.

The government had worked diligently throughout the years of nuclear power's development in conditioning the public to accept its word on issues of safety and regulation. The public was provided with information that was watered-down, and they were not expected to actively contest what they were fed through the media. When sections of the public became concerned about nuclear aspects they didn't understand or didn't have enough information

to process, policy makers relied heavily upon technical and scientific 'facts' which dissenters were unprepared to rival. Therefore, it is not surprising that the news releases sent to the media and made available by Met Ed for public perusal relied upon a similar approach. The news releases prior to the accident expectedly shied away from divulging any meaningful application of how events at the plant could influence the plant's functioning and the public.[111] Another important impacting force that contributed to the media's non-treatment of the Met Ed releases was the media itself. The media, like any marketer are driven by economics, they runs stories of interest...features that sell.

> The media, after all, are corporations integrated into some of the major corporations in the country. The people who own and manage them have a market: other businesses that advertise through the media. The media are selling their advertisers a product, namely readers and audiences. From an institutional point of view that's what the corporate media are: enterprises out to make money. Their behavior is rational. They reflect the interests of their owners.[112]

Drab, highly technical and scientific news pieces not only don't sell, but are beyond the scope of the average media consumer. Friedman also states that cumulatively, on inspection of the press releases, a pattern of sloppy operational procedures and consistent equipment problems at the plant were uncovered. "Perhaps the releases could have alerted the media and the public to problems at TMI if they had been better written and more understandable."[113] I contend that the releases were a formality meant to be overlooked and "lull people into a

---

[111] Sharon M. Friedman, "Blueprint for Breakdown: Three Mile Island and the Media Before the Accident." Journal of Communications Vol. 3 (Spring 1981), p. 119.

[112] David Barsamian, Stenographers to Power (Monroe, ME: Common Courage Press, 1992). p. 1.

[113] Friedman, pp. 119-20.

complacent state about the safety of nuclear power." The nuclear program had been functioning for decades with negative reports about plant operations being overlooked by the mainstream media while its benefits were trumpeted.

Until the accident at TMI, the media coverage of nuclear power infrequently focused on 'unusual occurrences' at plants, or on the actions of 'those crazy nuclear protesters.' The fact that the news releases were too technical to attract serious media and public interest prior to the accident is not an argument for media excuse nor is it an argument that can substantiate sole utility blame.

Met Ed, like many other utilities with nuclear interests, promoted and sold nuclear power to the public after the start-up of Unit-1 and before Unit-2 went commercial,. In this aspect, the promotional bias of nuclear utilities was endemic to their breeder institutions. Of this promotional bias in the industry, Harold Green of George Washington Law School stated the following in a hearing before the Senate in 1974:

> There has been a tacit conspiracy on the part of the atomic energy establishment-industry and government for the last 20 years to hide from the public view the risks inherent in nuclear power. I do not use the phrase 'conspiracy' in an individious sense. The fact of the matter is that the establishment fears that the public discussion of the risks will unduly alarm the public and slow the introduction of nuclear power which the establishment honestly believes is acceptably safe and in the public interest.[114]

Not only did the government/industry elites believe nuclear power to be acceptably safe, so did the utilities, but the public needed continual reinforcement of this point. Met Ed developed 'informational' campaigns

[114] Quoted in Fenn, 1981. p. 95.

directed at the local public to reinforce the promise of their nuclear endeavor. The utility had placed ads in the local newspapers and on radio stations, designed colorful pamphlets and handouts and went as far as to include inserts along with customer bills.

If the inquiring media, at all doubted the validity of the utility's comprehensible safety claims, and did virtually nothing to tip-off the public, why would it investigate jargonized press releases from the utility? What economic incentive was there for the Washington Post, Harrisburg Patriot, Lancaster Intelligencer, New York Times, Chicago Tribune, and radio stations to refuse the advertising dollars from the utilities? None. After decades of government/ industry money and practice devoted to securing nuclear power's commercial acceptance through turnkey offers and assured safety studies, utilities not only bought the technology but also the promotional practices that came with it. Who was to begin asking the 'wrong' questions...the media supported the government agenda, the public believed the media, the government and the utilities, corporations like GE and Westinghouse continued to invest money, and the utilities in turn became part of the nuclear family. The government had to have realized that at some point along the nuclear path, they were bound to experience a glitch.

What Happened?

The accident at the Three Mile Island nuclear plant in Middletown, Pennsylvania on March 28, 1979, proves to be a unique illustration of how the historical, incestuous relationship between the U.S. nuclear industry and the Federal Government actually conspired to cultivate an atmosphere in which

such an accident would necessarily occur. The accident location itself was not dictated by the conspiring forces, for such a thing could have occurred in Anytown, USA. However, the government's overt efforts to promote nuclear power technology, its lenience in regulation which enabled the technology's celeritous adoption by industry, and its backward approach to safety which disregarded the democratic process did culminate in Pennsylvania where nuclear power received its first endorsement for commercial acceptance.

Although the discussion of nuclear power technology up until this point has neglected to discuss how a nuclear reaction occurs as well as the mechanical and structural components of nuclear reactors, it is now imperative to present this information, as it relates directly to the TMI accident. What follows is only a brief description and is by no means complete. A nuclear reactor is designed to allow a fission chain reaction to occur at a controlled rate. This enables the heat being released to convert water to steam which then drives turbines for electricity generation. This means that by controlling some of the aspects of fission reactions in the core of the reactor , each individual fission event instigates exactly one more.[115]

The nuclear technology used to generate electricity in TMI's Unit-2 reactor, (where the accident took place) used the Pressurized Water Reactor (PWR) design type. This type of reactor employs lightly enriched uranium and primary and secondary water systems used to control the heat of the reaction. The primary coolant water is under sufficiently high pressure so that it doesn't boil. The secondary water circuit extracts the heat from the coolant which is

---

[115] Christopher Lampton, Predicting Nuclear and Other Disasters, (New York: Franklin Watts, 1989). pp. 70-71.

circulated through a turbine, and is used to generate electricity.[116] Problems with the PWR Reactor type have been related to the safe and proper functioning of the pressure vessel controlling the coolant waters. Control rods which are made of neutron absorbing materials, are raised or lowered into the reactor core from above to either slow down the chain reactions or speed them up. It should also be mentioned that the TMI plant has a concrete containment structure, encapsulating the area where the reactions occur.

At approximately 4:00 A.M. on March 28, 1979, the pump that circulated water in the secondary system stopped working, which halted the flow of water within this system. Because this water stopped flowing in this system, the temperature of the water in the primary system began to rise along with the pressure of the water. After the pressure reached a certain point, a relief valve opened to release some of the water from the system. The control rods were then lowered to slow the reaction in the core. The fission reaction was halted by the lowering of the rods but heat was still being generated by the radioactive elements still within the core. To cool the core, three emergency cooling pumps were turned on, but only water from one of the pumps reached the destination. Two of the valves where the water from the other two pumps was to pass, had been closed a few days prior for maintenance. In the control room, the pressurizer gauge for the pumps was rising off the scale, incorrectly indicating to control room technicians that there was core coolant present and that it was extremely pressurized. At this point, the initial valve which opened to release the pressure from the primary system had not closed and was releasing the water from the system. The water drained into a nearby tank and

---

[116] John May, Nuclear Age, (New York: Greenpeace, 1989). pp. 42-43.

proceeded to overflow onto the floor of the pump-house building.[117]

The workers knew there was a problem; lights on the control panels flashed, and sirens sounded. In the confusion of the lights and noise, the control room operators were hindered in finding the source of the actual malfunctions. One of the operators turned off the single pump that was feeding water into the system because a gauge read that there was ample water being supplied to cool the system down. The core of the reactor became uncovered from the lack and loss of the water. Two-and-a half hours after the accident began, the relief valve was closed, and it took another hour to bring water back into the system. The effort to shut down the plant to a point where no heat was being generated from the core, took several days. Radiation was released into the atmosphere and from the water that overflowed into the containment building, which was not built to hold radioactive material.[118] Around 7:30 in the morning, sudden increases in pressure pointed to blockage of the cooling system, perhaps to a hydrogen bubble that has formed in the reactor vessel.[119] Later that morning, radioactive steam began escaping from the auxiliary building. This continued until early afternoon.

Radioactivity continued to leak from the plant into the second day of the crisis, and low levels of radiation were detected in the atmosphere as far as 20 miles away. The NRC and other experts were unable to pin point the cause of the accident at this point. On the third day of the crisis, a new burst of radiation was released into the air deliberately. Gases that had built up in the

---

[117] May, 1989. p. 215-16.

[118] Lampton, 1989. p. 110.

[119] Bill Kiesling and Ed Perrone, "Corporate Meltdown," The Progressive (June 12, 1979). p. 14.

reactor's cooling water system were becoming dangerously pressurized and the release was controlled and necessary to prevent further plant complications.[120] During the venting of the steam, a hydrogen bubble was discovered by officials in the reactor core. Due to this release of radioactivity and the worry over explosion of the bubble, Governor Thornburgh recommended that pregnant women and pre-school aged children in a five-mile radius surrounding the plant, evacuate. At this point the NRC sent in Harold Denton to assume centralized control of all information concerning the accident and its developments. The decision to centralize the source of information was due to conflicting statements made by plant officials, PA politicians, and NRC representatives to the media. Seven days after the crisis had begun, on April third, the reactor was finally stabilized, the hydrogen bubble which posed no real danger, subsided, and the crisis receded.[121]

The Media and the Accident

The first press release written by Jack Herbine, Vice President for Generation at Met Ed stated that

> The nuclear reactor at Three Mile Island, Unit-2 was shut down as prescribed when a malfunction related to the feedwater pump occurred about 4:00 A.M. Wednesday. The entire unit was systematically shut

---

120 Thomas B. Farrell, et al., "Accidental Rhetoric: the root Metaphores of Three Mile Island," Communication Monographs Vol. 48 (December 1981) p. 282.

121. Stephen Orlofsky, ed., Facts on File (New York: Facts on File Inc., (April 6, 1979). pp. 242-43.

> down and will be out of service for about a week while equipment is checked and repairs are made.[122]

An optimistic air was definitely present in the initial reports about the accident from officials at the site. In the President's Commission report, a study assessing reassuring versus alarming statements made to the press by numerous sources is included. It found that in the first week of the accident, President Jimmy Carter and Energy Secretary, James Schlesinger were quoted more than 36 times, and all of these quoted statements were assuring about the accident. Although this study was geared to prove that the press acted inadequately in informing the public, it still makes its point about the sources of the assuring statements. In a sample from the Washington Post the day after the accident, official sources were referenced over 28 times in one article and its over-all tone was most reassuring. Charles Gallina, an NRC investigator stated that; "Nothing critical failed (at the plant), but its a dirty problem."[123], and Charles Blaisdell of PA's Emergency Management Agency said; "Our word is that the people have nothing to worry about. The radiation level is what people would get if they played golf in the sunshine."[124] Amongst numerous articles in the Harrisburg Patriot, that same day, Schlesinger is quoted as stating the following:

> The nuclear power plant industry has a good safety record. Over the years there have been no fatalities resulting from the use of nuclear power. Nothing is riskless, but when one weighs the risks overall, the advantages of nuclear power exceed the risks. . .Nuclear power continues to be an essential element in the nation's energy mix. Failure to do that

---

122 David Rubin and Ann Cunningham, "Report of the Public's Right to Information Task Force," The President's Commission on the Accident at Three mile Island (Washington, D.C.: U.S. Government Printing Office, 1980). p. 117.

123 Thomas O'Toole, "Radiation Spreads 10 Miles From A-Plant Mishap Site," The Washington Post (March 29, 1979). p. A1.

124 Ibid., p. A7.

> will mean growing dependence on foreign sources of supply and ultimately shortages that will affect the American economy.[125]

As in the past, Schlesinger's 'official' statements were parroted by the media, unaccompanied by contradiction. His reliance upon the traditional themes of nuclear power's safety, necessity and economic importance were by no means edited but rather framed by the 'fact' that no one was hurt as a result of the accident.

The reports which ensued in daily papers detailed practically every occurrence at the plant over the following week. Due to the confusion of the crisis situation and the necessity for conveying immediate information to the public, reporters relied almost exclusively upon official statements from government officials, plant operators and utility spokesmen. Many times these statements conflicted, causing public confusion over what was actually happening and what it meant for them. Consistence in this confusion is witnessed by the fact that a majority of independently owned daily newspapers, are dependent upon the AP and UPI wire services for their information and generally follow the nation's newspapers of record such as the Washington Post and the New York Times. Thus, to view how the mainstream media reported the accident it is more appropriate to look at media sources which had more than a day to gather their information.

In the April 7th issue of TIME, an article about TMI was the feature story. The article's banner heading was "A Nuclear Nightmare" and a photograph of the cooling towers graced the issue's cover. The copy opens with a dramatic description; In the dead of the night, hulks the 372-ft cooling towers

---

[125] "He Favors N-Power Despite Accident," The Patriot (Match 29, 1979). p. 5.

and two high domed nuclear reactors..."[126] A brief synopsis of the events which occurred in Harrisburg is given, stating that Pennsylvania Governor, Richard Thornburgh advised the evacuation of preschool-aged children and pregnant women, within a five mile radius of the plant leave the area. It summarizes how 'officials' at the site, by the week's end insisted that danger was receding. The next quote reported in the article is by "Declared nuclear critic, Ralph Nader: This is the beginning of the end for nuclear power in this country."[127] TIME commentary to Nader's assertion, "This of course was a considerable rush to judgement." Then the public is told that the accident at TMI will have benefits for the country and it's citizens in the form of "even tougher safety standards." By continuing to rely upon the progress myth (ie., out with the old in with the new safety standards), the cultural entrepreneurs have kept in line with past nuclear propaganda. Since TMI was not an event that the propaganda system predicted or expected the establishment is confronted with an opportunity to redeem themselves through greater progress. No official scandal is complete without high-profile intent of redemption.[128]

On the following pages of the article is a watered-down description of "How it Works", the nuclear reactor at TMI, that is. The discussion then turns to the initial downplay of the accident by Herbine. Followed closely by a brief commentary about "The China Syndrome", a movie which dealt with a nuclear accident and was released three weeks prior to TMI. "The thriller depicts nuclear plant officials as placing greed for profits far above the concern for

---

126 "A Nuclear Nightmare," TIME (April 7, 1979). p. 8.

127 Ibid.

128 Lee & Solomon, 1990. p. 205.

public safety."[129] The reference continues, stating that the key character is unfair in its "villainous caricature of power and construction industry officials, its basic premise will no longer seem so far-fetched to those moviegoers unattuned to the nation's debate over nuclear power."[130]

In reference to the water which overflowed onto the floor of the pumphouse building, the article cites a quote from Don Curry, Met Ed's top public relations official.

> There have been no recordings of any significant levels of radiation and none are expected outside the plant...There is no danger of a meltdown. There were no injuries, either to plant workers or to the public.[131]

But soon after this statement, it is reported that Pennsylvania's Department of Environmental Resource (DER) officials flew over the plant and detected a "small release" of radiation into the environment. The article then bounces back and forth , citing quotes from utility officials, which were reassuring; quotes from governmental officials (NRC, Lieutenant Governor of Pennsylvania and Governor of Pennsylvania) stating that Met Ed's information was misleading and conflicting. Thus, transferring the immediate blame and attention onto the utility, a comfortable scapegoat was provided for the public to attack. Then, to personalize the article a bit, a quote is added by William Metzger a maintenance man at the plant.; "There was an accident, not a disaster. I'm not afraid. I think the plants are safe."[132]

It is difficult to give the concise picture that the article displays. It discusses the developments at the plant as the accident continued and parrots

---

129 "A Nuclear Nightmare," April 7, 1979. p. 11.
130 Ibid.
131 Ibid.
132 Ibid., p. 12.

information given by numerous sources. After the article relays information about the hydrogen bubble which formed in the reactor, we are told that state and local officials are readying evacuation plans. President Carter is then quoted as saying that an evacuation would not indicate that danger was high, rather it would be a precautionary measure. On the following page of the article is an inset "How Much is Too Much", which discusses radiation levels and the dangers of radiation exposure. Along these lines, the article states that this accident will fuel the fire for anti-nuke groups; "An amalgam of the intellectually concerned and the idealistic young."[133] The context of this phrase promotes the stereotype of interventionists as hippies left-over from the 60's or students who are ridiculously naive and out of touch with "the hard realities of modern politics."[134] The article also 'exposes' a brief history of past problems with the TMI plants and other U.S. plants. It closes with statements from 'scientists' who say that non-nuclear power alternatives for energy production are not feasible.

The article included in this issue of TIME contribute nine pages to the entire magazine. Numerous photographs are interspersed with the discussion of the accident; surrounding an official spokesperson, pictures of Met Ed officials, the Lieutenant Governor of Pennsylvania, a local house dwarfed by the cooling towers, an aerial view of the plant, two diagrams of the reactor, a map of the surrounding area, a mother clutching her young child, refugees at the Hershey arena, an atomic waste tank, anti-nuke protesters, and a map of the United States showing where other reactor sites exist.

---

[133] Ibid., p. 19.

[134] Charolette Ryan, Prime Time Activism (Boston, MA: South End Press, 1991). p. 69.

The article content and photographs in the same week Newsweek issue are not much different from what was presented in the TIME article. The Newsweek comprises 12 pages of the issue, and some of the photographs were different, with the exclusion of the aerial view of the plant and the anti-nuclear protesters, which were exactly the same as those used in TIME. Fourteen photographs were included in this article and a more detailed diagram of the plant's reactor were shown.[135]

It is not surprising that the TIME and Newsweek articles are similar when one looks at the fact that both 'news' magazines are "Subsumed under the Washington Post."[136] The articles both appear to provide a balanced account of the situation, but subtle assertions and editorial comments about the; continued necessity for nuclear power, the danger of the accident (or non danger) as reported by public officials, the benefit of more strict control of plants which will result from the accident, and the depiction of anti-nuclear activists as being outside the accepted range of opinion, certainly frame the facts for the reader. It should be mentioned that no anti-nuclear activists were interviewed for either piece probably because

> The pre-established system and past media frames have ideological inertia on their side, i.e., they build on assumptions so taken for granted that mainstream media perceive them as the only logical approach to a situation. Conversely, challengers present unknown information organized around unfamiliar political assumptions.[137]

Another point which accentuates the homogenization of the articles in the two

---

[135] Merrill Shiels and William J. Cook, "Nuclear Accident," Newsweek (April 9, 1979). pp. 24-39.

[136.] Herman & Chomsky, 1988. p. 5.

[137] Ryan, 1991. p. 68.

issues and their similar frame can be drawn, if one considers that all of the reporters on the scene were staying at the same hotels, sharing the same stories, eating together and reiterating conflicting, mis-information to one another.

In discussing how the major networks covered the accident at TMI, the Gamson study (1989) provides a clear summarization:

> CBS and NBC left the work to the viewer to make its own conclusions based upon the facts that were presented about the accident. But, ABC presented a picture of environmental extremists as the same kind of people who were involved in antiwar (Vietnam) demonstrations. No interviews or quotes from protesters were used by NBC. Only CBS made any attempt to present the demonstrators' views. Three sound-bites were used conveying the sentiments of people representing the "Clamshell Alliance" and one of these three statements supported the accepted view that the activists were fanatics; 'The anti nuclear movement is an antiwar movement. We're fighting a war that has been waged against the environment and our health.'[138]

The study also found that of these TMI reports, a majority of the discussions focused upon the human interest perspective; What is it like living next to TMI?, Is the situation under control?, and How do you feel about the accident?. The news magazines articles also feature the human factor element in their copy by asking local residents similar questions. The utilization of personal accounts of the accident by the mainstream media is yet another way the facts may be distorted.

> The personalized format, with its focus on the individual, can obscure how individual cases (like TMI) are connected to a broader social inequity. A single case *could* exemplify broader social injustices that cannot be resolved without institutional changes. But, in segmenting the interesting from the important/institutional, the single case and its resolution become the news.[139]

---

[138] Summarized from Gamson et al., July 1989. pp. 18-21.

[139] Ryan, 1991. p. 44.

In the case of the accident at TMI, utility blame was discussed and the inadequacy of communication channels but the broader issue of the historic development of nuclear power, and how the accident was instigated by institutional forces was left unaddressed.

Further support of the mass media's avoidance of important institutional practices and its filtering of information, 'fit to be viewed' by the public is witnessed by reviewing how the alternative media reported the accident. It is necessary to include a discussion of alternative media reporting because through it, radically different perspectives receive a fair hearing. In the mainstream media

> The daily life stories that embody the truths of social elites and their publics seem objective because they are confirmed time and time again by self-fulfilling documentary detail. Information that doesn't fit the symbiotic mold can be ignored, denied or rationalized out of serious consideration...[140]

Alternative media sources are not subject to the same economic environment as that of the mainstream media. Their sources of income may be retained by a minimal number of advertisers but they rely heavily upon the donations of private individuals. Thus, the alternative media are not limited to print information or views which are obliged by large government and industry financial backers. Alternative media, however, are also constrained by their sources of financial support because it hinders the broad dissemination of information to mass audiences. Even if members of the public may doubt the facts presented to them in the mainstream media, they may have limited exposure to, or experience with alternative views and assimilating information

---

[140] W. Lance Bennett and Murray Edelman, "Towards a New Political Narrative," Journal of Communications (Autumn 1985). p. 158.

to construct alternative realities. "In times of crisis, the political environment becomes richer, conversations increase in number, whether spurned by direct experience or by media reports."[141] It is during a time of 'crisis' such as TMI, that alternative sources of information should be consulted since what is presented by the mainstream media will be more readily relied on by the public as necessarily true and important.

An article in the June 6, 1979 issue of The Progressive, develops the thesis that the official governmental policy about discussion of atomic technology was established in the Eisenhower administration. The article mentions a comment from Joseph Hendre, Chairman of the NRC in a phone conversation, in the aftermath of TMI, "Which amendment is it that guarantees freedom of the press? . . . Well . . . I'm against it."[142] It also suggests that the conflicting statements that the public received, were allowed by governmental officials so that "the scientific and technical complexities of the situation masked the bureaucratic and corporate self interests."[143] The following quotes about President Carter's energy policies at the time of the accident are also important in understanding the political economy of the energy issue and what governmental interests are served by corporations. One should recall that Carter's energy policies at the time of the accident were touted as being "a new direction" on the energy policy issue.

> The Administration is encouraging - increased reliance on coal in which they (large corporations) have a big stake, and continued subsidization of nuclear energy, in which many oil companies are also heavily involved.

---

[141] Ryan, 1991. p. 26.

[142] Dennis Hayes, "Keep Them Confused," The Progressive (June 6, 1979). p. 7.

[143] Ibid.

> The Administration would have us believe that higher prices, fewer comforts, and energy industry incentives are the answer to the energy crisis. But this crisis, like the President's response to it, is symptomatic of fundamental inequalities and contradictions in the political and economic system. It reflects the public's lack of control over the corporate structure that wastes resources through shoddy products and planned obsolescence.[144]

Another article in the following week's issue of The Progressive states how the accident at TMI was foretold more than nine months prior in a local paper called "Harrisburg". The author predicted the accident and stated that "the official stance from industry and government was (and is) that 'nuclear energy is safe, there is nothing to worry about'."[145] The article also states that hours passed before local community officials were informed about the accident. Bill Gross, TMI PR man was quoted on the morning of the accident as saying, "At this point, we're not concerned about public safety, but the economics of the situation."[146] The article also points to the actual start-up and continued operation of the plant which initially had numerous technical problems, as occurring for tax and rate purposes set-up by the government as incentives for continued operation. In the initial construction and licensing of the plant, Babcock & Wilcox were responsible for designing TMI's primary steam system. NRC licensing inspector, J. S. Criswell knew that Wilcox gauges had a certain chance of malfunctioning, but licensing was given to TMI because, "gauges shouldn't be made to cover all anticipated occurrences" and NRC's upper and middle management had made their intentions clear to side with the utility.[147] On a final note, the article explains how the plant's 'good record' of sustained

---

144 Hayes, June 6, 1979. p. 7.
145 Kiesling and Perrone, June 12, 1979. p. 14.
146 Ibid., p. 15.
147 Kiesling and Perrone, June 12, 1979. p. 16.

operation without a major accident since its upstart, made Met Ed eligible to receive $560 million from its insurers after the accident. This insurance went into affect only a few weeks prior to the accident.

As one can see, the information presented by the alternative media did reflect the importance of issues that were neglected by or absent from the mainstream media accounts of the accident. This type of information, had it been reality available to the public, it would have directed greater focus upon the broader institutional issue of nuclear power. Mainstream media did not probe the issue far beyond the surface of the actual accident. These media did not mention the NRC's passing-over of the gauge inefficiency of the plant nor did it stringently question mishaps at other nuclear plants before the accident at TMI. Although the mainstream press did mention the possible ramifications of certain types of radiation, it did not mention that the 'minimal' amount of radiation released at TMI could have long term effects for the citizens of that area and the environment.

Long before the accident at TMI there were problems with nuclear power, just as there continue to be problems. The accident itself demanded that the issue become recognized as newsworthy and attended to by the public. Powerful elites do enjoy a certain degree of public recognition so that, as in the case of TMI, the public outcry will demand government repentance. Resulting from the accident and its high profile coverage by the media, the government was presented with an opportunity to atone for their sins through the commissioning of a study on the events causing the accident and its consequences. By issuing an investigation into the accident, the government was allowed a chance to salvage the nuclear program. With the knowledge that an

investigation would ensue from the accident, the media was provided with material for a continuing 'good story', without directing too much attention to the government's continued support of the nuclear program.

The accident at TMI gave the mainstream media a story that embodied fast, dramatic conflict with a clear resolution; the President's Commission Report. Although this report took over eight months after the accident to complete, the media maintained an enduring interest in nuclear power by keeping the story alive until it could provide a government sponsored resolution to the problem.

> Every news story should, without any sacrifice of probity or responsibility, display the attributes of fiction, or drama. It should have structure and conflict, problem and denouement, rising action and falling action, a beginning, a middle and an end.[148]

After the report was issued, and its analysis of the accident surmised that the NRC and the utility were responsible for its causes, the government could recommend a overhaul of its regulating, licensing and administrative practices that would meet with public approval. The media covered the results and the recommendations of the expert investigative panel predictably, saying, in essence; we uncovered government neglect, the government responded to our exposure and public appal, we've showed that the 'system' can work, the government is changing its spurious practices.

The most prominent example of how the media coverage of the issuance of the President's Commission Report continued to defer to a pro-nuclear agenda is related to the problems of radiation and public safety. The

---

[148] Edward J. Epstein, News from Nowhere: Television and the News (New York: Vintage, 1973). p. 4.

utility, the NRC and the industry with media support, strove to minimize the public impression of how much radiation had escaped at TMI as well as how dangerous it might be.

> Those scare stories about radiation damage from the accident at Three Mile Island look increasingly far-fetched. Federal officials have said all along that little radiation escaped, posing virtually no threat to public health. Their judgement has been supported by all major investigations of the accident. But rumors of frightening physical damage to human and animal infants persists. None of these allegations have held up under careful scrutiny by disinterested parties.[149]

The task force reported and assessed the radiation releases from the accident as minimal. An excerpt from the Commission's report states the following:

> On the basis of scientific knowledge...(the radiation doses)...were so small that there will be no detectable additional cases of cancer, developmental abnormalities, or genetic ill-health as a consequence of the accident at TMI. At worst just *one* of the 325,000 people in the area who were eventually expected to die of cancer could be said to have a reasonable chance of having been affected by TMI.[150]

Although this is what was stated in the final report of the Commission and what was covered by the media when it was released, an NRC employee, Lake Barrett stated on April 12, that the radiation monitors in the plant stacks; "Did not provide accurate readings of absolute quantities of radioactivity released during the accident. High radiation levels had driven monitors off scale and rendered them useless."[151]

---

149 "Nuclear Fabulists," New York Times (April 18, 1980) p. A 12.

150 J. G. Kemeny, et al. The President's Commission on the Accident at Three Mile Island, the Need for Change: The Legacy of TMI, (Washington, D.C.: U.S. Government Printing Office, 1979), p. 34.

151 Quoted in Wasserman, et al., 1982. p. 232.

The media, while uncovering institutional malfeasance espoused that the scientific evidence provided in the Commission's report proved that no one was or could be hurt by the accident. The DER of Pennsylvania also investigated the possible affects of the radiation released from the plant and concurred with the Commission's assertions. The DER study like part of the Commission's study was developed to determine if the TMI accident had any *measurable* effects upon pregnancy outcome and infant health in the vicinity of the damaged nuclear reactor. The embryo and the fetus are highly sensitive to adverse environmental insults (I suppose this means radiation). These 'environmental insults' can cause mutations and\or congenital malformations and effect post-natal growth, development and morbidity.[152]

For this study, a ten mile radius surrounding the plant was used to sample infant mortality rates. Mortality rates were analyzed for the consecutive years of 1977, 1978, and 1979. The data gathered from these years was also broken down into calendar quarters. Data was obtained for Harrisburg alone, the 10 mile radius, including Harrisburg, as well as 10 mile radius excluding Harrisburg and also a control group of randomly selected areas in Pennsylvania other than the ones listed. The report states that

> The infant mortality rate was not significantly different between the 10-mile area with or without Harrisburg and the State of Pennsylvania for any of the three years under consideration. The higher death rate

---

[152] Dr. George K Tokuhata and Edward Digon M.P.H, Fetal and infant Mortality and Congenital Hypothyroidism Around TMI* (Harrisburg: Department of Health) Paper Presented at the International Symposium on Health Impacts of Different Sources of Energy, (Nashville, TN:, June 22 - 26, 1980). p. 1.

> indicated for Harrisburg separately is a reflection of the fact that approximately 1/2 of the infants born within the city were nonwhite.[153]

Based upon this study, Tokuhata told the media that "there is no evidence to date that radiation from the nuclear power plant influenced a rise or fall in mortality statistics. When the 31 infant deaths were considered in relation to the number of live births, no statistically meaningful difference was found."[154] Through the presentation of findings such as this, selected scientific evidence is politicized to conform with the pre-set agenda. By continuing to claim that no one was affected by the release of radiation, the media proved that the government was continuing to look out for the safety of its citizens; the safety standards set by the government did work...not even highly sensitive infants were harmed. "TMI showed that the safety systems worked , even in the face of a string of improbable errors. A total core meltdown was prevented, and most of the radiation released never breached the containment building."[155]

The safety issue and the real affects of radiation on the TMI population were hotly disputed. Two researchers, Ernest Sternglass and Dr. MacLeod, disagreed publicly about the conclusions drawn by the government's official researchers.

> Tokuhata's 'preliminary' data showed that an infant mortality rate within the ten mile radius was 7.2 per 1000 live births in 1978; in 1979 after the accident, the number had risen to 15.7 per 1000 - more than doubling. The numbers for infant death rates within a five-mile radius of TMI - though small- were even more damning.[156]

---

153 Ibid.

154 Ibid., p. 3.

155 Gamson et al., 1989. p. 21.

156 Wasserman et al., 1982. p. 251.

MacLeod was fired from his position as head of PA's Department of Health for contesting the official Tokuhata findings and siding with Sternglass. Sternglass presented articles in The Nation and The Progressive discussing his findings which were completely opposite to those reported by government researchers. He proved that considerable damage resulted from the releases of radiation at TMI and asserted that the NRC and the PA government continued to mislead the public about the adverse affects of radiation.

By providing an opportunity for high profile government redemption, the accident at TMI was integrated with the historic nuclear campaign allowing the continuation of the politization of nuclear technology. A brief look at nuclear power developments after the accident may help to further solidify this view.

Chapter 4

A New Direction for Nuclear Power Policy?

Introduction

> Nuclear opponents, who would shut down every reactor in the country, simply are not in touch with our needs for tomorrow. But, nuclear advocates, who would pretend that nothing was changed by our vigil at TMI, simply are not in touch with reality.[158]

Nuclear opponents did not shut down every reactor in the country, nor could they have, but, how much was actually changed by the vigil at TMI is open to some dispute. TMI was sporadically the topic of news editorials and reports for more than two years following the accident. The prevailing topics of discussion were the issues of the real versus the imagined harms from radiation released, and the governments new efforts to make existing plants safer. A great amount of research was conducted by academics, furious to find out unique ways of analyzing what happened and what the ramifications were for; the government, local citizens, the industry, the plant, nuclear power in general, journalists. After the excitement over TMI subsided, the accident at the Chernobyl nuclear plant in the Soviet Union occurred in 1986. The accident sent waves of concern throughout the world. Chernobyl also allowed nuclear power to rear its head in the U.S. media once again. Later in 1988 and 1989 the public was able to take action at the Shoreham and Seabrook plants. These efforts effectively halted the operation Shoreham and severly delayed that of Seabrook and the defeat of the nuclear barons was viewed as a success. The issue of nuclear power, however,

---

158 Dick Thornburgh, Pennsylvania Governor, quoted by William W, Scranton III Report of the Governor's Commission on TMI (Harrisburg, PA, Feb 26, 1980). p. ii.

did not die, on the 10 year anniversary of TMI, news pieces commemorating the event were wide spread and mounting concern over global warming instituted a new interest in nuclear power's benefits. What follows is a brief discussion of the media, government and nuclear news since TMI.

TMI-Related Developments

A major issue which has been neglected in many analyses of the TMI accident has been its economic costs. Reports such as the WASH-700 and 1400 attempted to estimate the 'costs' of a severe nuclear accident, and convinced that utilities might be unable to 'foot-the-bills', the government has continually renewed the Price-Anderson Indemnity Legislation. Absent from most economic costs considerations, and not broadcast by the media, were the financial costs incurred by the residents and the community in which the accident occurred. A report compiled by the PA Governor's Office of Policy and Planning evaluated such costs. The report was published in 1981, containing the following results:

> Employees working in manufacturing firms, within a 20 mile radius of the TMI plant, lost approximately $1.5 million in wages during the week of the accident. Those persons working in non-manufacturing firms, lost approximately $5.5 million in wages. Of the 1,340 insurance claims that were filed at the time of this report, (26.4 percent of which were rejected) the PA Department of Insurance paid out $1.5 million. (This does not include claims filed after April 30, 1980) Insurance claims paid out to local governments totaled approximately $85 thousand and the costs incurred by the Commonwealth of PA for overtime pay and administrative leave was estimated at around $30 thousand.[159]

---

[159] Dr. Walter H. Plosila, Director, The Socio-Economic Impacts of the Three Mile Island Accident (Harrisburg, PA: Governor's Office of Policy and Planning, 1981). pp. ii, 129, 135, 147.

These are only a few of the many costs addressed in the report. Even if one does not feel that the accident was serious in terms of the human dimension, the economic costs and inconveniences to individuals as well as the State, should lead one to question the economic soundness of continuing along the nuclear path.

In 1984, new information was uncovered regarding safety tests that had been conducted at TMI prior to the accident. Control room operators discarded the results of more than half the safety tests they conducted the year before the reactor's accident, and in some instances falsified them.[160] In February of 1984, GPU Nuclear pleaded guilty to criminal charges that it had falsified tests designed to detect water leakage from the reactor's cooling system. Of this new evidence, a representative of the Union of Concerned Scientists stated that there are still many questions which need to be addressed related to the accident at TMI.[161]

After TMI, equipment at nuclear plants across the United States was improved to add further safety features. Retrofitting of faulty or out dated equipment was mandated by the NRC and added regulations dealing with evacuation procedures and licensing were introduced.

> Despite post Three Mile Island improvements, nuclear plants are still plagued by problems, In the United States, there were almost 3,000 plant mishaps and 764 emergency shutdown in 1985, up to 28 percent from 1984. The average nuclear plant was shut down six times in 1985, and the industry as a whole averaged two shutdowns per day. More than a sign of trouble, emergency shutdowns are sudden, violent procedures that stress many parts of a nuclear plant and could impair safety. Although

---

[160] "TMI Tests Trashed," Science News Vol. 128 (September 21, 1985). p. 186.

[161] Ibid.

most shutdowns were due to minor problems, at least 18 were serious accidents that could have led to core damage.[162]

Although the accident at TMI had initiated changes in the functioning of plants and had impacted public awareness, little had changed in the industry itself.

Chernobyl and the U.S. Nuclear Program

No discussion of the nuclear power issue would be complete at this time without some discussion of the Chernobyl accident. Reporting of the Soviet accident by the U.S. mainstream media reveals how single minded and short-sighted the accounts tended to be. One should consider this media reporting as a government attempt to reinstitute confidence in the U.S. nuclear program. Although Chernobyl was an unscheduled accident like TMI, its magnitude was far greater and its instigation completely different.[163] The event gave the media yet another 'good story' to support the reinforcing schedule of public exposure to the nuclear power issue.

The Soviet accident succeeded TMI by seven years, and the government counted on the public's forgetfulness. Although images still faintly lingered in the collective conscience they were mailable enough to distort, if only slightly. How much of the government's pro-nuclear propaganda was changed by the accident and the revelations resulting from TMI? Media reporting of the Chernobyl accident gives one a good sense.

---

[162] Christopher Flavin, "Reassing Nuclear Power: The Fallout from Chernobyl," Worldwatch Paper 75 (Worldwatch Institute, 1987). p. 42.

[163] For an extensive discussion of theChernobyl plant design and the factors which instigated the accident see; Zhores Medvedev, The Legacy of Chernobyl (New York: W. W. Norton, 1990). pp. 4-20, 26 -33; and PBS Special presentation "Suicide Mission to Chernobyl."

The anti-communism element of the Herman & Chomsky (1989) propaganda model was employed in the mainstream media discussion of Chernobyl. As with coverage of TMI, newsmagazines like TIME and Newsweek, devoted almost entire issues to the accident. Accounts in TIME stress the lack of information made available by Soviet officials. To fill the 'void' of factual information, a report from an amateur radio enthusiast is included which states that hundreds of people were dead and wounded.[164] This report was carried widely by the media because it was thought to be from a reliable source. Concerns of government officials are also presented in the article;

> The White House fears that the mishap could further damage the U.S. nuclear power industry and even provide ammunition to nuclear disarmament advocates. White House spokesman Larry Speeks tried to deny that anything similar could happen in the U.S. atomic plants, "Ours are quite different than Soviet system and have a number of redundant safety systems built in." Noted another White House aide: "We don't want the hysteria building around the Soviet accident transferring over to the American power industry."[165]

Later it is stated that the Soviets' lack of candor in this situation is part of an ingrained national trait and that if Gorbachev had given out more information, he might have scored a brilliant diplomatic success. But instead, Gorbachev decided to acquiesce to the Soviet instinct for glum silence. The TIME article announces the outdated design of the Chernobyl plant, lack of safety standards (such as ours) and a foretelling article that was published in an Ukrainian newspaper, months before the accident. The report ends, stating that "When the Soviet Union was faced with a major crisis last week, its leaders

---

[164] John Greenwald, "Deadly Meltdown," TIME (May 12, 1986). p. 40.
[165] Ibid., p. 43.

reacted in a historic defensive style."[166]

An accompanying article in the same issue of TIME, states that there were lessons the U.S. nuclear industry could learn from the Soviet accident; authorities must be able to evacuate people living near nuclear plants quickly. Another interesting statement made, was that to believe a Chernobyl-type accident could happen here is 'stretching the point' a bit, because U.S. plant designs are quite different, containing built-in, fail-safe systems. Were the systems fail-safe at TMI?

> The U.S. industry operates in an open society, subject to laws that give the public considerable say over where nuclear plants are located and some inputs as to when and even if they will go into operation. The same cannot be said of the Soviet Union, where government makes all of the decisions without consulting the public.[167]

The irony of this statement cannot be lost to the reader. This article ends with a fairly optimistic air for the continued use of nuclear power in the U.S. and a reprimand for nuclear critics; "Critics of nuclear power may take some satisfaction in halting its expansion, but their success today could leave future generations sitting in the dark."[168] A rather similar tone was witnessed in the Thornburgh quote at the beginning of this section.

The correlate of official optimism was the unwillingness of U.S. officials to divulge information to the public in a meaningful way during TMI. Any critical discussion of the parallel between the TMI accident and Chernobyl was severely neglected by the mainstream media. By closely reviewing the issues that were skirted, one can see that the Soviet handling of the event was

---

[166] Ibid., p. 52.
[167] Peter Stoler, "Bracing for the Fallout," TIME (May 12, 1986). p. 59.
[168] Ibid.

not drastically different than U.S. officials' handling of TMI.

> Social systems allow accidents to occur with comparable severity, each according to its particular bureaucratic configuration...In the Soviet Union, cost-cutting commissars, under pressure to meet energy-production quotas probably sacrificed safety in their haste. In this country, profit pushing managers of huge corporations have cut their own corners to cover-up their mistakes. TMI's Met Ed and the NRC were as reluctant to face up to the disaster under their noses in 1979 as the Soviet authorities were.[169]

The mainstream media also, did not take into account the propensity toward human error and material failure; both can occur in any technological system, whether Soviet or U.S.

The performance of Governor Thornburgh at TMI was similar to Gorbachev's during Chernobyl, a parallel which was neglected in U.S. coverage of Chernobyl. Thornburgh was unwilling to listen to radiation specialists who recommended immediate evacuation of pregnant women and pre-school aged children from the surrounding 5 mile area, during the first crucial hours of the accident. The evacuation recommendation was taken seriously by Thornburgh, only after the real danger had passed. Gorbachev's handling of the accident was similar to Thornburgh's in that, there was an absence of emergency communication and evacuation plans and a withholding of data concerned with radiation releases.[170] This of course was a much greater problem in the Soviet case since a core meltdown had occurred and the radiation released was extremely detrimental. In both instances, after the accidents had occurred, officials who should have been abreast of the situation did not understand what

---

[169] E.P. Thompson, "After Chernobyl," The Nation (May 12, 1986). p. 363.

[170] Harvey Wasserman, "Time to Dispel the Nuclear Cloud," The Nation (May 24, 1986). pp. 721 - 723.

was happening within the reactors.

Dichotomization and anti-communism as a means of national policy control mechanism comes into play when viewing how differently Chernobyl was treated from the accident at TMI. The U.S. government, until the time of the Soviet accident, was using the Soviet's impeccable nuclear record as a reason for us to continue development of our nuclear plants. As soon as the accident transpired, our government fell back into a type of 'Red Scare' mentality. "The Soviets are secretive . . . its a national trait . . .they can never be cured of deceit . . Gorbachev is still a product of the Communist regime which put him into power." By attaching these connotative word to the Soviets, it places them outside the realm of accepted U.S. standards. This type of labeling was also witnessed in mainstream media accounts of anti-nuclearist comments after the TMI accident. Our government also kept attempting to assure the U.S. people that a Chernobyl-type accident could <u>never</u> happen here because Soviet technology is outdated, unsafe and workmanship is shoddy (because the workers there aren't treated as well as they are in the United States). Official U.S. assertion of the above mentioned problems which contributed to the Soviet accident clearly lacks insight by neglecting to retrospectively consider how our own government acted at the time of TMI.

<u>A Breach of the 'System'?</u>

A few years after the accident at Chernobyl, public tension was mounting in the United States over the start-up of the Shoreham nuclear plant on Long Island. U.S. Energy Secretary, John Herrington declared "The Shoreham plant must open. If it doesn't, the signals will be a low point in this [nuclear]

industry's history."[171] To the dismay of industry supporters in high places, the Shoreham plant, however, did not open. Many authors rightly contend that it was the concentrated efforts of public interveners that halted the project in its tracks.

> Opponents of the plant raised serious questions about its safety, siting and related matters, which slowed the bureaucratic wheels and helped to stretch out the time required to complete Shoreham. This resulted in insurmountable cost overruns for the utility. Prompted by public opposition, local politicians and administrators moved to block the plant's operation on the grounds that it was impossible to work and emergency evacuation plan for the area.[172]

Along with the plant's extensive costs, $5.3 billion, government officials could not deny that the plant's location, fifty miles east of New York could have catastrophic consequences on the population if an accident occurred. But, 'officials' like Harold Finger, president of the U.S. Council on Energy Awareness[173] felt that the evacuation issue was a 'phoney' one. Finger stated, in a 1990 Public Utilities Fortnightly article that it there was ever a need to evacuate the area, residents would be given hours, even days of advanced notice. He feels that the public has a "totally exaggerated view."[174] If this is any indication of the prevailing political sentiment the political activism on the part of the public, was not taken as seriously as one would be led to believe. A similar

---

171 "As Shoreham Goes," The Nation Vol. 246 (July 11, '88). p. 811 - 12.

172 Stoler, 1985. pp. 162-163.

173 The U.S. Council for Energy Awareness is a right-wing, pro -nuclear think tank that does much of the nuclear promotion work for the Federal Government.

174 Lori M. Rodgers, "Harold Finger Looks at Nuclear Power," Public Utilities Fortnightly (November 22, 1990). p. 23.

effect was witnessed at the Seabrook plant in New Hampshire where evacuation plans were also of paramount concern.

> Seabrook's opponents managed to block the billing practice known as Construction Work in Progress (CWPI), which would have permitted The Public Service Company of New Hampshire to charge consumers for the nuclear plant before it began producing power. Without the CWPI, the company was driven to the brink of bankruptcy.[175]

At first glance, it appears that the effects of empowered interveners provided a lesson for the nation; if people organize and fight back they can win;

> Even against the formidable forces that backed Shoreham: Big Government (the White House, the Department of Energy and the NRC who worked with LILCO), Big Business (the nuclear industry, which regarded Shoreham's operation as critical to its future, poured funds into the drive to save the plant), Big Banks (particularly Citibank, which since the 1950's has functioned as a financial overseer of LILCO, Big Science (Scientists from Brookhaven National Laboratory on Long Island have cooperated closely with the company in promoting Shoreham and Big Media (The New York Times and Newsday have consistently demanded that the plant go on line).[176]

The public did overcome these forces, as the abandonment of both Shoreham and Seabrook suggests. However, this did not cut-off any vital link from the highly organized structure which was mentioned. Hopes for constructing and operating these plants were dashed, but the 'industry' did not die.[177] One might select the abandonment of these projects as proof that the democratic process worked to incorporate public interests and breached the nuclear propaganda system. But, the comforting successes of the anti-nuclear movement did not

---

[175] Harvey Wasserman, "Shut Down, But Not Out," The Progressive (August 1988). p. 21.

[176] Robert Emmet Long, ed. "Energy and Conservation," The Reference Shelf (New York: H. W. Wilson Co., 1989). p. 75.

[177] Wasserman, 1988. p. 21.

diminish the number of nuclear plants continuing to function in the U.S., nor did it diminish the risks of other plants on-line and those waiting to be made operable. For the nuclear establishment, the sacrifice of the two plants may have put a crimp in the works, so to speak, but the resilience of the government/ industrial/media complex which has endured the test of time would not surrender that easily.

New Rhetoric?

In 1989, on the 10 year anniversary of the accident at TMI, media reports and analysis of the accident resurfaced to, once again, reinforce scheduled public exposure to the issue of nuclear power in the United States. Most of the mainstream accounts detailed improvements in the industry resulting from the accident as well as higher safety standards and stricter governmental control. These reports tended to emphasize that no major accident had been witnessed in the U.S. since TMI. Nuclear critics, however, used the 10 year mark to reopen the critical discussion of the government's role in continued promotion of the nuclear agenda and its glossing-over of linear studies revealing the effects the radiation released during the accident.

> It is not widely known that General Public Utilities has already paid between $15 and $20 million to settle 200 health claims out of some 2,500 that have been filed. We have not learned any details of these claims because the settlements were made with the condition that each recipient agreed not to reveal any information about their claim or the amount they were awarded. Most people are also not aware that the radioactive plumes spread far beyond the 10-mile evacuation radius, and that a sudden rise in mortality rates occurred in areas exposed to these

radioactive clouds.[178]

Of the Tokuhata study relied upon by the Kemney Commission for its definitive conclusion that 'no one was hurt' by the accident, Dr. Ernest Sternglass, professor of radiological physics, stated that the Commission did not consider the effects of the wind-blown radiation at the height of its release.

> While the Commission was preparing its report, the Vital Statistics section of the Pennsylvania Department of Health would not release any mortality data, on the grounds that it had not yet been adequately reviewed. By the time the data were officially compiled, the Kemney Commission had already submitted its final report.[179]

Sternglass, Wasserman and Gould have been among the few nuclear critics who have extensively followed-up on reports from the population surrounding TMI and have studied infant mortality in areas of New York, Maryland and New Jersey in the years succeeding the accident. It is the research from those scientists that was dismissed by government officials immediately following the accident. And since that time it is those reports which the government has continually attempted to discredit. Wasserman (1989) asserts that the government has been able to convince the public that radiation affects were inconsequential at TMI because

> We in the United States think of our government as a great protector, and the sad and sorry truth of the matter, revealed in TMI, is that the government is not our protector. (In fact) It is not looking out for our best interests, our public health. Quite the contrary, they (government) are looking toward the interests of the giant corporations like G.P.U., and helping them get away with murder.[180]

---

[178] Gary Null, "The Great Three Mile Island Cover-Up," Penthouse (November 1989). p.120.

[179] Sternglass Quoted in; Null. p. 136.

[180] Harvey Wasserman; "The Atomic Attorney General," Penthouse (November, 1989). p. 132.

Wasserman also contends that when governmental officials like Richard Thornburgh (former Governor of PA and at that time Attorney General of the U.S.) conjoin with high ranking, pro-nuclear public officials, such as George Bush, John Sununu and Secretary of Energy, James Watkins, there is little room for nuclear power's promotion to be stinted.

During the interim years between the TMI accident and its 10 year anniversary, Thornburgh spoke widely about his success in handling the accident and lauded the NRC for maintaining rigorous controls over the industry. As the public's memories of the accident became more and more distant, and the dissenters were placed at ease by their triumphs at Shoreham and Seabrook, officials were conspiring to reinstitute their pro-nuclear agenda. With the hopes that enough time had elapsed, government officials began to speak publicly about their concerns over global warming. Author Fred Jerome (1989), details how the media follow the nuclear sentiments of those in powerful positions. He states that in the years of nuclear power's developmental stages, media coverage reflected an unlimited optimism about the technology and during the decade following TMI the press gave wide coverage to nuclear related happenings and public protests. Noticing a new trend after the extremely hot summer of 1988, Jerome cites these reports from the mainstream media:

> Environment Magazine: - Nuclear power needs to be reassessed to address the needs of the environment and the dangerous situation of global warming.
> New York Times: - Many environmentalists and politicians are now saying the greenhouse effect has made the nuclear option more tangible.

> Washington Post: - Increased reliance on nuclear energy will be essential to any serious attempt to stabilize the climate.[181]

The media, throughout the evolving phases of nuclear power have a well documented history of endorsing the prevailing sentiments of those in power. This was obviously not changed by the accidents at TMI or Chernobyl. It is the role of the media to function as the mere 'stenographers to power'. Hence, a challenging of the official political agenda by the media, at this juncture would be inconsistent with past media performance and would alert the public to question the, "soundness of our self-correcting institutions."[182]

A new trend in justifying the continued use of nuclear power was getting it's footing. In the year following TMI's ten year commemoration, President George Bush made the following statement to the Nuclear Power Assembly:

> Just as America gave birth to nuclear technology in the 1940's we can lead the world into a new era of, *safe, reliable, economical and environmentally clean* nuclear power in the 1990's. This clean domestic source of power lessens the risk of energy dependence on foreign sources.[183]

These comments were made while tensions in the middle east were mounting, bringing the discussion of foreign energy dependence back into public view. This relatively familiar rhetoric can be recognized from the 1970's oil crisis. The advancing conflicts in the Persian Gulf provided nuclear advocates with another opportunity to highlight the nation's vulnerability of foreign oil supplies. But,

---

[181] Fred Jerome, "Yo-Yo Journalism and Nuclear Power," Technology Review (April; 1, 1989). p. 73.

[182] Chomsky, 1989. p. 20.

[183] Nathaniel Mead and Ray Lee, "Nukespeak," The Progressive (December 1990). p. 18. (emphasis added)

advocate's arguments were enhanced this time around by the grim warnings of scientists pointing to excessive fossil-fuel burning as a cause of global warming. The new rhetorical language spewing from the mouths of officials in the 1990's is a form of Orwellianism which couples the scientific concerns over global warming with the tried and true 'necessity' for U.S. energy independence. This 'new' language device has been coined "nukespeak."

> Nukespeak is the use of manipulative messages aimed at achieving public acceptance of nuclear power. It involves a calculated distortion and suppression of facts about nuclear power, and corporate control over scientific research and public information. . .Spearheading the propaganda effort is the U.S. Council for Energy Awareness (USCEA). The USCEA sees public acceptance as the key to a nuclear comeback. "The primary obstacle is not the industry, which has an excellent track record., but public perception," says Scott Peters USCEA's manager of media services. The Council has called upon politicians, utility managers, business executives, and university scientists to "reexamine nuclear's environmental benefits" - and "spread the good news."[184]

The novelty of 'nukespeak' is debatable, however, the odd application of the environmental argument lends a new twist to the familiar approach. Sorrily, the rejuvenation of nuclear power is not something that has only been discussed in the media, the solidification of intended implementation can be seen in the actual industry and government support.

Congress is now considering a number of bills as part of legislation to implement President Bush's national energy strategy. "One of the main changes proposed would simplify the process of public hearings before granting a license to new nuclear power stations."[185] For nuclear power to continue, industry advocates have advised government officials that a;

---

[184] Ibid., p. 19.

[185] Helen Gavaghan, "Congress to Smooth Path for Nuclear Power?" New Scientist (March 16, 1991). p. 12.

> Licensing process is necessary that would provide for plant operation in five to six years through design certification of standardized plant designs; early site permits that would allow siting issues to be resolved before construction; and, combined licenses to construct and operate standardized nuclear plants allowing for the resolutions of issues prior to construction.[186]

A decision in favor of these recommendations, would once again prevent the public from having a voice in decisions affecting public health and safety. The nuclear industry has told governmental officials that nuclear technology has evolved to a point where inherently safe reactors are a realty, and that the real obstacle lies in the public and economic realms. These statements do not reflect the facts that no safe method of containing high-level nuclear waste has been found or that decommissioning of existing plants will be a cumbersome, expensive process.

Economical feasibility, contend promoters, can be achieved through the collective commitment of; the industry to down-size the scale of plants, making them simpler and more standardized; and government, to minimize the licensing process, support standardization and provide funds for nuclear waste disposal.[187] The real challenge, however, is focused upon convincing the public that the new line of reactors is inherently safe.

The Nuclear Regulatory Commission documented more than 30,000 mishaps at nuclear plants in the United States between 1979 and 1987 and commercial nuclear power plants have averaged more than one fine a week and paid more than $18.5 million since 1987, for safety violations.[188] To counter these

---

[186] Marshall Yates, "Nuclear Energy: Failed Promise or Promising Future," Public Utilities Fortnightly (November 22, 1990) p. 13. (pp. 12-13.)

[187] Howard J. Bruschi, "Standardization: The Key to Nuclear Revitalization" Public Utilities Fortnightly (June 1, 1991). pp. 23-24.

reports which may affect the new momentum building to regain public acceptance

> The nuclear industry rolls out an esteemed Ph.D., invariably cited as an "independent" source, to offer opinions consistent with the industry's point of view, not surprisingly, independent scientists whose positions oppose the industry's are either selectively quoted or never heard from.[189]

A recent TIME article included in an issue devoted to environmental awareness employs the standard routine:

> As energy needs rocket, America must face down old demons and decide on a role for nuclear power. Surprise its gaining new respect...Many scientists applauded the findings of the independent academy, which conducted a 15-month federally funded study of the greenhouse problem. Says Ratib Karam, director of the Neely Nuclear Research Center at Georgia Tech.: "Nuclear energy is now the only major source of power that does not produce CO_2. In terms of global society, nuclear power plants are essential.[190]

Not only were the 'independent findings' federally funded, the esteemed Ph.D., was director of a Nuclear Research Center and to top-off the slant of the article, it's author was an established writer for Public Utilities Fortnightly, an undauntingly pro-nuclear, industry publication. The TIME article asserts that GE and Westinghouse have spent a total of $70 million on designing a new, safer generation of advanced reactors. "The key is getting the first one built" states DEO Secretary for Nuclear Energy, William Young..."That would let the public know what it can expect."[191]

---

[188] Joseph Herbert, "N-Plants Average One Safety Fine a Week, Papers Show," The Morning Call (November 31, 1991). p. A1.

[189] Mead and Lee, 1990. p. 19.

[190] John Greenwald, "Time to Choose," TIME (April 29, 1991). p. 54 (pp. 54-61.)

[191] Ibid., p. 61.

Regardless of the corporations' financial commitment to develop a new generation of plants, this rhetoric sounds strikingly like that which prompted the turnkey phase; 'all we need to do is get the first ones built and start-off the market.' If the public wants to know what to expect from this new generation of plants; how the government will regulate these new plants; how the media will perform when the new plants are built, all that must be done is to dig out the history books and see what practices were used in the last few decades. If this is done, there can be no realistic choice for the public to weigh when considering the nations energy future.

> It seems clear that we have given nuclear power a fair trail and that its promise falls far short of even the most modest hopes. The earth is not large enough to accommodate this technology; political systems cannot manage it; and although scientists and technologists may have performed admirably, they have not been able to solve the fundamental problems of contamination of an imperfectly run world. The verdict is the same if we consider economic problems, climatic changes due to carbon dioxide increases caused by fossil fuels, and the apparent pressures on global energy supplies. These problems can be solved without nuclear power - and will be, if there is to be a future for industrial civilizations. Nuclear can by systematically and deliberately abandoned as a potential source of power.[192]

---

[192] George Woodwell, quoted in; Flavin, 1987. p. 73.

Chapter 5

CONCLUSIONS

Throughout the three discernable phases of the nuclear power life-cycle in the United States, the mainstream media have played an indispensable role in disseminating politicized information to the general public. Many authors view the accident at TMI as a watershed event that conquered the government's nuclear propaganda campaign, releasing the genie from its bottle. Although the accident did help to reveal part of the government's hidden nuclear agenda, time heals many wounds.

> There was a sharp, temporary increase in opposition to nuclear power with the flood of publicity about the TMI accident, but when the media spotlight was turned off, public-opinion rebounded almost Immediately pre-TMI levels. Even more striking, the same effect was replicated at the release of the Kemney Commission report on the accident six months later. Again there was a sharp increase in media coverage, accompanied by a sharp drop in support of nuclear power. And again there was the same rebound once the media spotlight was turned off. When public opinion is viewed over a 15 year period beginning the early 1970's, TMI looks little more than a small blip.[193]

Before, during, and after TMI, the mainstream media's use and manipulation of scientific evidence and its deference to 'official' sources continues to confound the public's ability to appraise nuclear power as a defunct energy option. This practice has been widely developed and supported by the Federal Government and applied extensively to almost all U.S. policy issues. By, relying upon commentary or analysis from endorsed sources, the

---

[193] Gamson, 1989. p. 81.

government was able to make the statement that no one was hurt by TMI. Although the assertion was not fully true in the case of the public; it was also not completely false in the minds of the nuclear barons. The government's efforts to develop and promote nuclear power have always been based upon a calculated risk. This risk is one which places greater emphasis upon loss of financial returns over human fatality and suffering. In weighing these calculated risks, government officials could discredit the medical studies which proved the public was harmed, because indelible harm was not inflicted on the industry.

A similar distortion of information was presented by the media in the wake of the world's worst nuclear accident, Chernobyl. This is manifested by nuclear industry representative's shameful efforts to capitalize on the Soviet catastrophe, with the claim that it could never happen here. The ephemeral gratification gained by activists' success at Shoreham and Seabrook, however, should not be viewed as completely without merit. What happened at both of these plants resulted, in part, from public concern, activism, and the directed organizational efforts of those opposed to nuclear power's continued proliferation. The paramount concerns of these groups were central to the health/safety issues and the absence of evacuation plans. If groups such as these keep their constituency strong, build upon the organizational skills necessary to defeat nuclear promoters, and their resilience is as undaunted as the 'system' they work within and against; there is the possibility that the third phase of the nuclear life-cycle, will be that of its demise. But, if those convicted to the anti nuclear camp, become ensnared by the new 'nukespeak' with its scientific homage to the environment, then little possibility exists for publicly instigated change to occur, resulting in the nuclear life-cycle's rebirth. A rebirth that will

most likely be more immune to true public intervention.

The ways of dissenters are more than just hard, they're down right formidable. For those who say that a Chernobyl-type accident can't happen here, the rhetorical questions such as, What if that type of accident it did happen here?, and What about TMI?, simply provide no sound way for dissenters to attack the problems of nuclear technology. By asking these questions, dissenters will receive the following answers from 'official sources', TMI was handled, no one was hurt. and our nuclear plants are run under the close scrutiny of the democratic system. The ramifications of both accidents continue to linger. A report released only a few months ago stated that, 13 years after the accident at TMI, GPU is only halfway through evaporating the radioactive water generated by the accident. Since the radioactive levels are still too high to send in human clean-up crews, the Unit-2 reactor will be sealed for 20 years until the radioactivity naturally declines. Hundreds of thousands of Russians and their children have been dying of diseases and cancer-related illness since the accident, their food, milk, and land will be highly contaminated for years to come and the United States has conveniently turned its head to these horrors and questions they do not wish to confront.

Accidents are not eliminated by governmental systems, rather their causes and effects are distorted by political and economic forces operating to support the agendas of the systems. "There is mounting evidence that nuclear technologies are pushing societies in a direction that has more in common with the visions of Orewll and Stalin than those of Jefferson."[194] The nuclear propaganda campaign in the United States provides this evidence.

---

[194] Flavin, March 1987. p.68.

Bibliography

"A Nuclear Nightmare," TIME (April 7, 1979) pp. 8-12, 15-16, 19-20.

"AEC to Referee, Not Promote Industry," Science, Vol. 174 (October 29, 1971) pp. 478-79.

"As Shoreham Goes," The Nation Vol. 246 (July 11, 1988). pp. 811-812.

Ahearne, John F. "Telling the Public About Risks," The Bulletin of the Atomic Scientists (Sept. 1990) p. 39.

Barsamian, David. Stenographers to Power Monroe, ME: Common Courage Press (1992).

Bennett, W. Lance and Murray Edelman. "Towards a New Political Narrative," Journal of Communications (Autumn 1985) p. 158.

Brown, J. A. C. Techniques of Persuasion: From Propaganda to Brainwashing Baltimore, MD: Penguine Books (1963).

Bruckenfield, Dick. "Are Nuclear Plants Unsafe - Even Without and Mishap?" The Washington Post (Nov. 11, 1979) p. B4.

Bruschi, Howard J. "Standardization: The Key to Nuclear Revitalization," Public Utilities Fortnightly (June 1, 1991). pp. 23-24.

Bupp, Irvin C. and Jean-Claude Derian. The Failed Promise of Nuclear Power, New York: Basic Books (1978).

Burnham, David. "AEC Files Show Effort to Conceal Safety Perils," New York Times (November 10, 1974).

Business Week, (February 24, 1973), p. 68.

Business Week, "Room at the Top for ex-Cabinet Men," (September 1, 1975), pp. 19-20.

Camilleri, Joseph A. The State and Nuclear Power, Seattle: University of Washington Press (1984).

Chomsky, Noam. Necessary Illusions Boston, MA: South End Press (1989).
Cohen, Steve. "Political Economy of Nuclear Power (1945 - 1990): The Rise and Fall of an Official Technology," Journal of Economic Issues Vol. 24:3 (September 1990), pp. 781 - 811.

Common Cause. "Serving Two Masters," Washington, D.C.: Common Cause (October 1976), pp. i, ii.

Dawson, Frank G. Nuclear Power Development and Management of a Technology, Seattle: University of Washington Press (1976).

Dean, Gordon. Report on the Atom, New York :Alfred Knopf (1953).

Del Sesto, Steven. Science, Politics and Controversy: Civilian Nuclear Power in the United States, 1946 - 1974, Colorado: Westview Press (1979).

Ellul, Jacques. Propaganda, The Formation of Mens Attitudes New York: Random House (1965).

Epstein, Edward J. News form Nowhere: Television and the News, New York: Vintage (1973).

Farrell, Thomas B. et al. "Accidental Rhetoric: The Root Metaphores of Three Mile Island," Communication Monographs Vol. 48 (December 1981). pp. 271-300.

Fenn, Scott. The Nuclear Power Debate, New York: Praeger Publishing (1981).

Flavin, Christopher. "Reassessing Nuclear Power: The Fallout from Chernobyl," Worldwatch Paper 75, Worldwatch Institute (1987).

Freidman, Sharon M. "Blueprint for a Breakdown: Three Mile Island amd the Media Before the Accident," Journal of Communications Vol. 3 (Spring, 1981) pp. 116-126.

Gamson, William A. et al. "Media Discourse and Public Opinion on Nuclear Power : A Constructionists Approach, " Americal Journal of Sociology Vol 95:1 (July 1989) pp. 1 -37.

Graber, Doris. Processing the News, New York: Longman (1988).

Gavaghan, Helen. "Congress to Smooth Path for Nuclear Power?," New Scientist (March 16, 1991). p. 12.

Green, Harold. "Nuclear Safety and the Public Interest," Nuclear News Vol. 15 (September, 1972), pp. 75-77.

_____. "Nuclear Power Licensing and Regulation," The Annals Vol. 400 (March 1972), p. 124-25.

Greenwald, John. "Deadly Meltdown," TIME, (May 12, 1986). pp.?

_____. "Time to Choose," TIME (April 29, 1991). pp. 54-61.

Grofman, John W. E. and Author Tamplin. Poisoned Power: The Case Against Nuclear Power Plants, Emmaus, PA: Rodale Press (1971).

Gyorgy, Anna and Friends. No Nukes, Everyone's Guide to Nuclear Power, York, PA: South End Press (1979).

Hayes, Dennis. "Keep Them Confused," The Progressive, (June 6, 1979). pp. 6-10.

"He Favors N-Power Despite Accident," The Patriot (March 29, 1979) p. 5.

Herbert, Joseph. "N-Plants Average One Safety Fine A Week, Papers Show," The Morning Call (November 31, 1991). p. A1.

Herman, Edward S. and Noam Chomsky. Manufacturing Consent, New York: Pantheon (1988).

Jerome, Fred. "Yo-Yo Journalism and Nuclear Power," Technology Review, (April 1, 1989). pp. 73-74.

Kaku Michio and Jennifer Trainer. Nuclear Power: Both Sides, New York: W. W. Norton & Co. (1982).

Kemeny, J. G. "Role of the Managing Utility and its suppliers," The President's Commission on the Accident at Three Mile Island, The Need for Change: The Legacy of TMI, Washington, D.C.: U.S. Government Printing Office (1979).

Keating, Thomas W., "Politics, Energy and the Environment: The Role of Technology Assessment," American Behavioral Scientist, Vol. 19 (September - October 1975) pp. 50 - 64.

Kiesling, Bill and Ed Perrone. "Corporate Meltdown," The Progressive (June 12, 1979). pp. 12-17.

Kohn, H., "Anti-Nuclear Spring Offensive," Rollling Stone Magazine No. 268 (June 29, 1978). pp. 13, 33-35.

Lampton, Christopher. Predicting Nuclear and Other Disasters, New York: Franklin Watts (1989).

Lapp, Ralph. "The Nuclear Power Controversy," The New Republic, (Jan. 23, 1971). p. 18.

Lee, Martin and Normon Soloman. Unreliable Sources, New York: Carole Publishing (1991).

Long, Robert Emmet, ed. "Energy and Conservation," The Reference Shelf, New York: H. W. Wilson Co. (1989). pp. 37-72.

Lyons, Richard D., "2 Reports See Risks in Nuclear Future," The New York Times (April 30, 1979). p. A1.

May, John. Nuclear Age, New York: Greenpeace (1989).

Mead, Nathaniel and Ray Lee. "Nukespeak," The Progressive, (December 1990). pp. 18-22.

Medvedev, Zhores. The Legacy of Chernobyl, New York: W. W. Norton (1990).

Morone, Joseph G. and Edward J. Woodhouse. The Demise of Nuclear Power, New Haven: Yale University Press (1989).

Mullenbach, Philip. Civilian Nuclear Power, New York: Twentieth Century Fund (1963).

Myers, Desiaz III. The Nuclear Power Debate, New York: Praeger (1977).

Nader, Ralph and John Abbotts. The Menace of Atomic Energy, New York: Norton (1977).

Nimmo, Dan and James E. Combs. Mediated Political Realities, New York: Longman (1983).

Nisbet, Robert. "The Rape of Progress," Public Opinion Vol. 2 (Feb. 6, 1979). p. 55.

Novick, Sheldon. The Electric War, San Francisco: Sierra (1976).

Null, Gary. "The Great Three Mile Island Cover-Up," Penthouse, (November 1989). pp. 120, 136, 140, 158.

"Nuclear Fabulists," New York Times (April 18, 1980). p. A12.

Olson, McKinley. Unacceptable Risk: The Nuclear Power Controversy, New York: Bentam Books (1976).

Omang, Joanne. "Nuclear Power Plants Around the U.S. Record 2,300 Glitches in '79," The Washington Post (July 14, 1980). p. A20.

_____. "Group Assails VEPCO Ads on Nuclear Power as One-Sided," The Washington Post (Dec. 13, 1977). p. C8.

Orlofsky, Stephen, ed. Facts on File, New York: Facts on File Inc., (April 6, 1979). pp. 241-246.

Otis, Todd H. A Review of Nuclear Energy in the United States, New York: Praeger Press (1981).

O'Toole, Thomas. "Radiation Spreads 10 Miles from A-Plant Mishap Site," The Washington Post (March 29, 1979). p. A1.

Pringle, Peter and James Spigelman. The Nuclear Barons, New York: Holt, Reinhart & Winston (1981).

Plosila, Dr. Walter H., Director. The Socio-Economic Impacts of the Three Mile Island Accident, Harrisburg, PA: Governor's Office of Policy and Planning (1981).

Public Law 91-190. "The National Environmental Policy Act of 1969," United States Statutes at Large 1969, Vol. 82., Washington, D.C.: U.S. Government Printing Office (1970). pp. 850 - 856.

Rodgers, Lori M. "Harold Finger Looks at Nuclear Power," Public Utilities Fortnightly (November 22, 1990). pp. 22-24.

Rolph, Elizabeth S. Nuclear Power and Public Safety, Lexington, Mass.: Lexington Books (1979).

_____. Regulation of Nuclear Power: The Case of the Light Water Reactor, Santa Monica, CA: Rand Corporation (1977).

Rubin, David and Ann Cunningham. "Report of the Public's Right to Information Task Force, " The President's Commission on the Accident at Three Mile Island, Washington, D.C.: U.S. Government Printing Office (1980).

Ryan, Charolette. Prime Time Activism, Boston, MA: South End Press (1991).

Scranton, William W. III. Report to the Governor's Commission on TMI, Harrisburg, PA (February 26, 1980).

Shiels, Merrill and William J. Cook. "Nuclear Accident," Newsweek (April 9, 1979). pp. 24-39.

Sills, David L. et al. Accident at Three Mile Island Boulder, Colorado: Westview Press (1982). p. 97.

Stoler, Peter. Decline and Fail, New York: Dodd, Mead & Company (1985).

_____. "Bracing for the Fallout," TIME (May 12, 1986). p.59.

"Suicide Mission to Chernobyl," PBS Special Presentation (1991).

Thompson, E. P. "After Chernobyl," The Nation (May 12, 1986). pp. 363-367.

"TMI Tests Trashed," Science News, Vol. 128 (September 21, 1985). p. 186.

Tokuhata, Dr. George K, and Edward Digon M.P.H. Fetal and Infant Mortality and Congenital Hypothyroidism Around TMI,* Harrisburg: Department of Health (1979) *Paper presented at the International Symposium on Health Impacts of Different Sources of Energy. Nashville, TN (June 22-26, 1980).

Union of Concerned Scientists. "What You Should Know About the Hazards of Nuclear Power" (Pamphlet), Cambridge (1979).

United States Atomic Energy Commission. Civilian Nuclear Power: A Report to the President - 1962, Washington, D.C.: United States Atomic Energy Commission (1962).

United States Atomic Energy Commission. Reactor Safety Study, An assessment of Accident Risks in U.S. Commercial Nuclear Power Plants, WASH - 1400, Washington, D.C.: U.S. Atomic Energy Commission (1974).

United States Atomic Energy Commission. The Atomic Energy Act. Public Law 585, (1947).

United States Atomic Energy Commission. The Atomic Energy Act. Public Law 703, (1954).

United States Atomic Energy Commission. Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants, WASH - 740. Washington, D.C.: Atomic Energy Commission (1958). pp. 576 - 579.

United States Atomic Energy Commission. "AEC Study of the Price-Anderson Act, Part 1," Atomic Energy Law Journal Vol. 16:3 (1974).

United States Congress, "Hearings Before the Joint Committee on Atomic Energy," Nuclear Power Economics 1962 through 1967, 90th Congress 2nd Session, Washington, D.C.: U.S. Government Printing Office (1968).

United States Senate Committee on Government Relations, "Disclosure of Corporate Ownership," Washington, D.C.: U.S. Government Printing Office (1974).

Wasserman, Harvey, et al. Killing Our Own, New York: Delacorte Press (1982).

_____. "Time to Dispel the Nuclear Cloud," The Nation (May 24, 1986). pp. 721-723.

_____. "Shut Down But Not Out," The Progressive (August 1988). pp. 20-21.

_____. "The Atomic Attorney General," Penthouse (November 1989). pp. 120, 132.

Winner, Langdon. Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought, Cambridge: MIT Press (1977).

Yates, Marshall. "Nuclear Energy: Failed Promise or Promising Future," Public Utilities Fortnightly (November 22, 1990). pp. 12-13.

VITA

Kelly L. Stephens was born in Reading Pennsylvania on August 1, 1968. In 1990, she received a Bachelor of Science Degree in Communications with an emphasis in Public Relations, from Millersville University in Lancaster, PA. Ms. Stephens was a public relations intern at the Pennsylvania State Library, Harrisburg, PA in the Summer of 1989. From this brief exposure to state government, Ms. Stephens decided to pursue her education in government. While a graduate student at Lehigh University, Ms. Stephens has been a research assistant at the Center for Social Research, writing reports for the NSF and the Department of Education. She will continue her work there until the fall of 1992. Upon receipt of her Master's degree, Ms. Stephens plans on pursuing a Ph.D. in political science, concentrating on media and government interactions.

END

OF

TITLE